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BY

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EXAMINER IN GEOGRAPHY TO THE COLLEGE OF PRECEPTORS;
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PREFACE.

IN this Series I have tried to embody the experience of a teacher and of an examiner. For twelve years I have been teaching Geography constantly to classes of all sizes and all ages; and during the last five years I have examined nearly 30,000 candidates in the subject.

This experience has led me to several conclusions, which will, I believe, be confirmed by most practical teachers who are interested in Geography as a subject of real educational value :—

1. That the maps which are so lavishly supplied in modern text-books, cannot generally be used directly with the text, as it is impracticable to have the book open in more than one place at a time ; but that their presence in the book has led to neglect of the Atlas.
2. That an excessive variety of type and other mechanical devices for classification are apt to confuse the average pupil.
3. That most text-books contain much which would be better learned from the Atlas, or which is only an unnecessary tax on the memory.

Consequently, this Series contains no maps and little variety of type ; and I have intentionally avoided mentioning, *e.g.* exact heights, distances or sizes, small

industries, and unimportant places. Wherever any definite comparisons are made, they are intended only for reference, and not to be learnt ; but, of course, in teaching I do use exact standards—taken from our own locality, and therefore not equally useful elsewhere.

I hope, too, that the book has more than these negative merits. I have had the privilege during the last five years of lecturing on the Teaching of Geography to a large number of practical teachers, including members of the Teachers' Guild, of the National Schoolmasters' Holiday Course, and the Teachers' Section of the Oxford Summer Meeting. This book is written exactly on the lines of these lectures, and embodies the criticisms and suggestions of these professional audiences.

L. W. L.

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INTRODUCTORY.

1. The British Empire covers about one-fifth of the land of the globe; and the tonnage of its Merchant Navy is greater than that of all the other countries in the world put together.

- (1) Out of about eighteen millions of steam tonnage alone, the British Empire owns about eleven millions.
- (2) The huge extent and varied character of the different parts of the Empire give the command of all kinds of commodities, and the large fleet provides every facility for the cheap and rapid transport of them.
- (3) The fact that this transport is conducted by water is an immense advantage, for water-carriage is very much cheaper than land-carriage for several reasons. For instance, a horse that can draw only one ton in a two-wheeled cart, can draw 40 tons in a barge.

2. The conditions of modern life cause population to gravitate to a few very large centres.

- (1) In an Oceanic Empire like the British, these centres are almost always the harbours on which all trade converges to enter or leave each country.
- (2) Climatic conditions also affect the distribution of population. A surplus population, finding a climate similar to that of their mother-country—with similar vegetation and conditions of human life—will form Colonies of Settlement, *e.g.* Canada; where the conditions of life are so different as to be prohibitive of such

settlement, there may still be Colonies of Exploitation or Trade, *e.g.* Tropical Africa.

- (3) In Colonies of Settlement the harbours are of relatively less importance than in Exploitation Colonies; *e.g.* Halifax (N.S.) is relatively less important than Singapore.

3. The essentials of a really valuable harbour are :

- (1) A large, deep, safe anchorage, *e.g.* Walvisch Bay contrasted with Port Elizabeth.
- (2) Easy access from the ocean in any weather or at any state of the tide, *e.g.* Sydney (N.S.W.) contrasted with Madras.
- (3) Easy communication inland, *e.g.* Montreal contrasted with Bombay.
- (4) Facilities for coaling, *e.g.* Esquimalt contrasted with Melbourne.
- (5) Rich land or dense population behind the harbour, to give certainty of return cargo without delay or difficulty, *e.g.* Calcutta contrasted with Trincomali.
- (6) Freedom from heavy duties, *e.g.* Hong-Kong and Halifax.
- (7) Protection of situation or fortifications, *e.g.* Gibraltar or Aden.

4. British commerce demands the occupation of such posts of vantage along the Great Trade Routes and the maintenance of a powerful navy.

- (1) War disorganises all commerce while it lasts, and involves countless sacrifices in the preparation for it, *e.g.* difference of railway gauge, hindrance of fortifications to the natural growth of towns, loss of male labour during time of military service, enormous taxation, etc.
- (2) The internal trade of a small country, like the United Kingdom, that is rich in coal and iron, must merge in an external trade; and any country, small or great, which cannot provide itself with sufficient food, must import bread and meat.

(3) The most valuable producing areas are the Colonies of Settlement, where some 200,000 British emigrants seek work, or fortune, or adventure every year ; the most important posts of vantage are the political fortresses along the routes joining these producing areas.

5. The early history of the Empire includes three epochs of geographical discovery.

(1) Its beginnings in the sixteenth century were characteristic of the "spacious days of great Elizabeth," when Sea Dogs like Drake and Hawkins made gallant individual efforts to win New Worlds for their Faerie Queen ; but the efforts were so disjointed and spasmodic that they could scarcely be expected to have had much permanent effect. The British possession of Newfoundland dates, however, from about 1583.

(2) A firm foundation was laid in the seventeenth century by means of Merchant Companies like the Hudson Bay Company and the Virginia Company. Their settlements, though small and isolated, were definite attempts at colonisation and development of commerce ; and their political importance appealed at once to a soldier and statesman like Cromwell, and led to their permanent annexation to the Mother Country.

(3) In the eighteenth century the Merchant Company was superseded by the scientific explorer, *e.g.* Cook, as the private adventurer of the sixteenth century had been superseded by the Merchant Company ; but isolated instances of both the old forms of colonisation were found, and both the private enterprise and the commercial schemes were used to promote the new object of Imperial dominion.

(4) The development of Africa was left for the nineteenth century, for various reasons, which have caused it to appropriately be called "the Dark Continent,"—the most obvious being that its geographical conditions have been a tremendous obstacle to its exploration.

(5) It is worthy of notice that the original 'trade motive' in most parts of the Empire was a desire for luxuries, *e.g.* furs, spices, jewels, precious metals, etc.; and the trade in luxuries led to the far more important trade in comforts and necessaries, *e.g.* the grain and timber of Canada, the cotton and tea of India, the sugar and tobacco of the West Indies.

BRITISH AMERICA.

Chapter 1. Political Divisions.

1. British America comprises the Dominion of Canada, Newfoundland (with its province of Labrador), the Bermudas, British Honduras, British Guiana, the British West Indies, and the Falkland Islands.

- (1) Owing to its position and its size, Canada is the most important British colony. It is the largest continuous stretch of land under one flag except Russia and China; it is larger than the United States without Alaska, and nearly as large as Europe; it constitutes nearly half the British Empire, and is about forty times as large as the Island of Great Britain.
- (2) Newfoundland, with Labrador, is nearly twice as large as Great Britain ; but Labrador is valueless, and Newfoundland alone is only about six times as large as Wales, *i.e.* considerably smaller than England.
- (3) The Bermudas have an area about one-third that of Bute, or one-seventh that of the Isle of Wight.
- (4) Except Haiti, Cuba, Puerto Rico, and the two French possessions of Martinique and Gaudeloupe, nearly all the islands of importance in the West Indies belong to Great Britain. Their total area is nearly twice that of Wales.
- (5) British Honduras is rather larger, and the Falkland Islands rather smaller, than Wales ; and British Guiana is nearly the size of the United Kingdom.

DOMINION OF CANADA.

Ottawa, 45° N. (=Bordeaux).

Chapter 2. Surroundings.

1. Canada has sea on three sides, and even on the fourth side there is a large area of water in the Great Lakes.

- (1) Owing to the climate, the Arctic Coast is practically useless, though it has bays admirably adapted for harbours, soil of great natural fertility, and abundance of minerals.
- (2) The Atlantic Coast is the most useful at present, because it has been the longest settled, it has unique facilities for communication inland, it looks towards the European markets, and its fisheries have very great political importance ; but it has great climatic disadvantages. Cf. p. 15.
- (3) The Pacific Coast is really the best, and will become more and more important, especially in connection with the development of its own mineral wealth and of the manufactures of Japan ; it is much steeper and much less indented, and has much deeper shore-water, than the east coast. It is also the warmer, as the cold Labrador current runs between the Gulf Stream and the east coast. Cf. p. 13.
- (4) The interior of the continent, especially towards the east, is thus within easy reach of the commercial—if not of the climatic—advantages of the sea. For instance, wheat can be shipped direct to Liverpool from Port Arthur, which is a fresh-water port 2000 miles from the ocean. And Hudson Bay may some day be almost as useful as the Great Lakes in this respect.

2. Hudson Bay is about twice the size of the Black Sea, and reaches as far south as the latitude of London ; but the entrance to it from the Hudson Strait is in the latitude of Reikjavik.

- (1) This north end of the Hudson Strait is completely ice-bound for more than half the year, but steamers specially built for the ice could keep up continuous traffic for at least four months in the year, including fully one month after harvest.
- (2) The surrounding country is so low and level that it affords great facilities for railway construction inland to Lake Winnipeg. York Factory is already being connected thus with Winnipeg, and the line will be continued to Fort Churchill.
- (3) Owing to the shape of the earth in such a high latitude, both these ports are nearer to Liverpool than Montreal is, though the latter is at least 20° farther east ; and Liverpool is 1000 miles nearer to Winnipeg and 2000 nearer to Yokohama *via* them than *via* New York.
- (4) The rivers, especially the Churchill and the Nelson, might be canalised ; but at present they are too shallow even for continuous canoe traffic, owing to the excessive evaporation off the central lakes, from which they draw their waters.
- (5) The bay has a very beneficial effect on the climate to the south of it.

3. The Great Lakes may be looked upon as a huge inland sea.

- (1) They have a total area nearly half the size of the Mediterranean, and are all connected with one another by the St. Lawrence system and ship-canals.
- (2) Lake Superior is about the size of Ireland, and Lake Huron and Lake Michigan are not very much less ; Lake Ontario is about the size of Wales, and Lake Erie is half as large again.

- (3) The trade on them is enormous, but they are subject to dense fogs and terrible snowstorms. Cf. p. 17.
- (4) The difference between the level of Lake Superior and that of Lake Erie is only 30 feet, and there is no difference between the level of Lake Huron and that of Lake Michigan ; but there is a difference of over 300 feet between Lake Erie and Lake Ontario, half of which is accounted for by Niagara.
- (5) There is a complete series of canals on the Canadian side, the Welland going round Niagara.

N.B.—The International boundary runs up the middle of all the lakes except Michigan, which is entirely in the United States.

4. The islands off the British Columbia coast are characteristic of the fiord system.

- (1) As in Norway, they keep the inshore water very calm, and are famous for salmon-fishing.

5. The islands off the east coast are due to the sinking of the continent, and the consequent conversion of old valleys into straits.

- (1) Off Newfoundland the sand-banks have been partly made by the melting of ice-bergs brought down by the cold Labrador current into the Gulf Stream, and the consequent precipitation of the soil that all icebergs carry with them from the land on which they were built up.

6. The land boundary both towards Alaska and towards the United States—except for the Upper St. Lawrence and the Great Lakes—is entirely artificial, and is marked in most places only by a line of posts.

- (1) This absence of a physical barrier is beneficial to commerce, especially by rail ; but it has caused some little political trouble.
- (2) It has also a very marked effect on the climate of the Great Lakes. Cf. p. 17.

7. The Canadian harbours fall naturally into three groups:—

- (1) The Atlantic group, which includes both river and ocean ports.
- (2) The Lake group, which will increase in importance as the various canals are deepened so as to admit larger vessels to and from the Atlantic.
- (3) The Pacific group, which have a great future before them.

8. The Canadian fisheries are extremely important both commercially and politically, the chief products being cod, herring, lobster, and salmon.

- (1) The market value of the fish amounts to more than £4,000,000, but that does not at all represent the importance of the industry. The cod fishery alone employs more than 50,000 men, who would form an invaluable Marine Reserve in times of national danger.
- (2) The cod, herring, and lobster come from the east coast, where both ice and access to markets are more easily obtained. The chief centre is Lunenberg, which, like the neighbouring harbour of Halifax, is never frozen, and which is conveniently situated for the despatch of the fish to the important 'Romanist' markets in the West Indies and Brazil.
- (3) The salmon are mainly confined to the tidal rivers of the west coast, *e.g.* the Fraser and the Skeena, where the fiords are very sheltered. The chief centre is New Westminster.

N.B.—There is a considerable trade in white fish from the Great Lakes and Lake Winnipeg.

Chapter 3. Ports.

1. The Atlantic group has three important ocean harbours and three important river harbours.

- (1) The ocean harbours are Halifax, St. John, and Port Nelson ('Fort York' or 'York Factory').
- (2) The river harbours are Montreal, Quebec, and Charlottetown.
- (3) All the river harbours are completely ice-bound for four or five months every year, and Port Nelson is even worse ; but, thanks to the Gulf Stream, Halifax and St. John are never frozen.

2. Halifax, which is about the size of Carlisle or Exeter, has almost all the essentials to a successful harbour.

- (1) It is large and deep, with excellent anchorage, and its entrance protected by M'Nab Island.
- (2) It is easily accessible from the ocean by the largest vessels, in any weather and at any state of the tide.
- (3) It has direct communication inland, being the terminus of the Inter-Colonial Railway.
- (4) It is within easy reach—by water—of the Sydney and Pictou coal-fields.
- (5) The richness of the land and the denseness of the population behind it guarantee return cargoes without much delay or difficulty.
- (6) It is strongly fortified. Indeed, it is the only place in the Dominion still garrisoned by British troops.
- (7) No charge is made for dockage, and there are great facilities for repairing vessels.

3. St. John and Port Nelson are distinctly inferior to Halifax, but for very different reasons.

- (1) St. John, which is exactly the same size as Halifax, is much farther from coal, and is an inferior harbour,

being specially troubled by the tide. The funnel shape of the Bay of Fundy, its smooth volcanic floor, and the pressure of the Gulf Stream, cause the tide to rise higher and faster than anywhere else in the world.

- (2) Port Nelson lacks almost every climatic and commercial advantage except nearness to Europe, but the latter advantage must make it become more and more important. Cf. p. 7.

4. Montreal, which is as large as Bristol, is much the most important of the river harbours, but it is handicapped by the climate. Cf. p. 15.

- (1) It is on an island, at the head of navigation for large ocean steamers ; and it is the eastern terminus of the St. Lawrence canal system, the southern terminus of the Ottawa canal system, and the northern terminus of the Champlain canal system.
- (2) It stands at the most easterly point at which the St. Lawrence is bridged ; it is the terminus of the Inter-Colonial Railway, and the junction between it and the Canadian Pacific and the Grand Trunk Railways.
- (3) It is the natural outlet for Ontario, the most populous and important of all the provinces ; it exports enormous quantities of grain, flour, cattle, and cheese, from or through Ontario, and timber from the Ottawa.
- (4) As the great transport centre of a country rich in iron, it has developed the largest iron and steel industry in the Dominion ; but it has no coal. Cf. p. 23.

5. Quebec is much more important than the little island harbour of Charlottetown (cf. p. 26), but it has entirely lost its old pre-eminence, mainly owing to the deepening of the river up to Montreal.

- (1) It is just the same size as Greenock, which has been supplanted by Glasgow for a similar reason. Cf. Havre and Rouen.

- (2) It is the centre of a large lumber and pasture district, and the combination of pasture with forests of hemlock spruce has given rise to one of the largest leather industries in North America.
- (3) It was the scene of Cartier's welcome by the Indian chief, Donnacona, in 1534, and of the heroic deaths of Wolfe and Montcalm in 1759.

6. There are five important lake ports, all of which are in Ontario, and three of which are on Lake Ontario, *i.e.* within easy reach of the Pennsylvanian coal-fields.

- (1) Toronto, which is about the size of Newcastle, is the centre of the densest population, and has thus become a great railway junction and the chief university of Canada. Its position on the lake gives it such a good climate—in the latitude of Mentone—and the soil is so fertile, that it is also a great agricultural centre.
- (2) Hamilton, which is about the size of Oxford or Bath, has similar climatic and agricultural advantages, the soil being specially suited to fruit-growing; it is also the junction of the north and south 'shore' railways, and commands the Welland Canal round Niagara.
- (3) Kingston is to the east end of Lake Ontario what Hamilton is to the west end; it is the first point at which the Grand Trunk Railway touches the lake, it commands the Rideau Canal to the important political centre of Ottawa, and it is in enchanting scenery.
- (4) The other two ports are Port Arthur and Port Sarnia, both lake and railway junctions, the former commanding the Winnipeg grain trade from the north-west corner of Lake Superior, and the latter commanding the Chicago grain trade across the south-east corner of Lake Huron.

7. The Pacific coast has three important harbours—New Westminster, Vancouver, and Esquimalt.

- (1) There are innumerable inlets which, humanly speaking, are certain some day to be harbours of world-wide reputation.
- (2) Of the two mainland ports, Vancouver is better than New Westminster, Burrard Inlet being a larger, deeper, and safer harbour than the mouth of the Fraser ; and Vancouver has, therefore, been made the terminus of the Canadian Pacific Railway (known as 'C.P.R.'). Cf. p. 17.
- (3) The island harbour of Esquimalt, the port of Victoria, is one of the great natural harbours of the world. It is within easy reach, by rail and by water, of the Comox and Nanaimo coal-fields ; its sea-approach up the Juan de Fuca Strait is wide, deep, and direct ; the Olympian Mountains shelter it from the south-west gales, and help to give it a beautiful climate ; it practically commands the whole coal-trade of the west coast as far as San Francisco, the salmon and gold trades of the British Columbian rivers, and the fur-trade of the Alaskan islands.

Chapter 4. Surface and Climate.

1. Canada, like the United States, is naturally divided into three areas :

- (1) A high mountain system in the west.
- (2) A low mountain system in the east.
- (3) A huge low plain in the centre.

2. The western mountain system, besides being very high, is very long, very broad, and very near the sea ; it runs from north-west to south-east, and has some deep depressions across it.

- (1) Thus, it meets the wet winds at their wettest, it condenses their moisture very suddenly and very completely, and it can store the moisture in huge glaciers.

- (2) A large proportion of the rainfall drains away *eastward* through the depressions across the range, thus giving Canada the most useful system of inland navigation in the world ; and the glacier reservoirs guarantee the supply of water even through the driest summer.
- (3) Through the same depressions the warm south-west winds—completely dried by the precipitation of their moisture—can pass on over the prairie, where, as the ‘Chinook winds,’ they have a very marked effect on the climate.
- (4) Under the shelter afforded by the Rockies from the cold dry north winds, the warm wet Anti-Trades make the climate of the west very mild, and encourage a magnificent forest growth.
- (5) The highest peaks are—Mount Logan and Mount Elias in the Sea Alps, and Mount Brown and Mount Hooker in the Rocky Mountains ; and the chief Pass is the Wapta or ‘Kicking Horse,’ a mile above sea-level—by which the C.P.R. crosses the Rockies.

3. Central Canada is an enormous plain of very low elevation, separating the forest region of the Atlantic seaboard from the mineral wealth of the Rockies.

- (1) It slopes down very gradually from the south, *i.e.* the U.S.A. boundary, to the Frozen North, and has absolutely no protection from the Arctic winds.
- (2) It has also three ‘steps’ down from the Rockies to the centre—the Alberta step, the Assiniboine, and the Manitoban—the temperature varying with the level and the distance from the mountains.
- (3) The soil is rich almost everywhere except in the Frozen North (cf. p. 6), the level affords every facility for cultivation and transport, and the climate is very healthy for man and beast, the intense frost being also very useful for cleansing and pulverising the soil.

4. The low mountain system in the east is the water-parting between the Hudson Bay and the St. Lawrence, and its position gives it a very heavy snowfall.

- (1) This makes it a great forest region (cf. p. 19), and the cleared land is most suitable for pasture.
- (2) The narrowness of the area from north to south, compared with its length, makes the St. Lawrence valley very important for both land and water transport.
- (3) The Laurentian plateau consists mainly of the barren peninsula of Labrador, and has been 'weathered' down in the course of ages to a quite insignificant height. It is probably the oldest piece of land in America.

5. The chief river is the St. Lawrence, which rises, like the Mississippi, at a very low elevation on the Height of Land, where it receives the first of its many names, St. Louis ; and its average fall per mile for 2000 miles—deducting the 300 feet of the Niagara Falls and Rapids—is practically imperceptible.

- (1) The coldness of the Labrador current, the presence of so much land round the estuary, the absence of mountains to keep off the ~~Arctic~~ winds, the freshness of the water, and the high latitude, all combine to make it ice-bound for four months every year.
- (2) Even when it is open the navigation is not very good : two of the three entrances to the estuary, the Gut of Canso and Belle Isle Strait, are very narrow ; the meeting of the Gulf Stream with the Labrador current causes dense and frequent fogs ; and the need for ship-canals is obvious.
- (3) But the river comes through so many lakes that its waters are too pure to deposit any bar or delta, and the importance of these lakes for commerce is literally enormous. Ocean vessels can ply for 1000 miles up

the waterway—to Montreal, and lake vessels can ply for another 1000 miles—to Port Arthur.

N.B.—Montreal is 300 miles nearer to Liverpool than New York is.

6. Three other rivers are really important—the Saskatchewan, Mackenzie, and Fraser.

- (1) The Nelson-Saskatchewan will become very important, especially with the development of traffic *via* the Hudson Bay.
- (2) The Mackenzie drains a huge area, carrying off the surplus water of the Great Slave, Great Bear, and Athabasca lakes, but it does almost more harm than good. The reason for this is that throughout its lower course it is ice-bound for three-quarters of the year; and the melted snow from its upper basin, being checked by the ice in the former, floods the whole country for miles, converting it into one enormous frozen marsh.
- (3) The Fraser descends so precipitately from the Rockies that it is practically useless for navigation, though it can be navigated by moderate-sized vessels for 100 miles—up to the Yale rapids; but its lower valley has been very useful in connection with the construction of the Canadian Pacific Railway, and its pace and volume will make it of great value for mechanical purposes.

7. The general level of the country and the depressions across the Rockies are most favourable to transport both by river and by rail.

- (1) Montreal is the centre of a network of railways in the populous east.
- (2) Winnipeg is the ‘pivot’ of the great Canadian Pacific Railway system, which is one of the most important railways, both politically and commercially, on the face of the earth.

(3) It gives uninterrupted communication for trade or troops on British territory from the Atlantic to the Pacific, and is much the shortest route to Australasia, China, and Japan ; it has rich coal-fields and magnificent harbours at each end ; in time of war, *e.g.* with France or Russia, it would be a much safer route to India than the Suez route, and much shorter than the Cape route.

8. The climate is one of great extremes, except in the west, with some interesting peculiarities.

- (1) The long duration of sunlight in summer leaves little time for radiation of heat at night, and thus makes it possible to ripen crops very far north ; and, though the winter night is correspondingly long, the snow helps to lessen the darkness and to keep the soil warm.
- (2) Owing to the absence of mountains across the country in the south from east to west, there is no barrier between the Arctic cold and the Tropical heat ; and this causes the terrible 'blizzards' on the Great Lakes —owing to the strong contrast between the warm water of the Mexican Gulf and the icy water of the lakes.

The air over the latter under a cloudless sky is naturally very moist ; and thus warm dry winds from the south coming into this cool moist air cause dense fogs, while cold dry winds from the north cause terrible snow-storms. Cf. the fogs off the Newfoundland Banks.

- (3) For the same reason, the Great Plain is subject to summer frosts and to floods. Both are due partly to the absence of trees to check radiation at night, but mainly to the absence of mountains to exclude the cold Arctic winds ; and both can be lessened by planting trees.

The frosts can also be rendered harmless in the meantime by 'smudge-firing,' *i.e.* burning damp straw

(which is of no value in the grain districts) along the north side of the grain-fields on frosty nights.

- (4) As the mountains in the west run north and south parallel to the coast, they cut off the moisture and the cool air which the Pacific would otherwise send to the interior.

9. As the sea is the source of all rain, the rainfall ought to increase with nearness to the sea.

- (1) The average rainfall along the west coast from about San Francisco up to Alaska, and along the east coast from C. Sable up to Labrador, is always over 40 inches; in the interior of the continent it is always under 20 inches, and sometimes under 10.
- (2) The precise amount depends on the character of the winds and of the mountains or other condensing medium. For instance, at Vancouver, which is just in the centre of the Anti-Trade region, the rainfall is about 60 inches; at Winnipeg, which is in the same latitude about 1100 miles inland, it is 16. The result is that British Columbia is covered with dense timber, while Manitoba is treeless.
- (3) As there are no mountains in the north-east to precipitate moisture in the form of rain, it is precipitated by the cold Arctic winds in the form of snow, and the snow-fall increases with the moisture. At Winnipeg it is about 60 inches, while in the triangle shut in by the Great Lakes, the Hudson Bay, and the Gulf of St. Lawrence it rises to 160.

N.B.—10 inches of snow = 1 inch of rain.

Chapter 5. Vegetation.

1. The vegetation varies, of course, with the soil and the climate; but the four great commercial products are timber, pasture, grain, and fruit.

- (1) Almost a quarter of the continent is 'tundras,' and produces only dwarf vegetation—stunted trees, shrubs, mosses, etc.
- (2) The summer is hot enough, partly owing to the low level, but too short to develop properly the grains and roots which civilised man and his domestic animals need.
- (3) The length of the winter and the intensity of the cold cause the animals to grow additional fur; and fur is therefore the main commercial product of the region, the vegetation being too stunted to have any value.
- (4) The recent development of gold-mining along the Yukon has suggested the existence of considerable mineral wealth in all the north-west part of the region.
- (5) The climate and the conditions of life make it an admirable resort for people in search of health or sport during the short, bright, warm summer.

2. Timber is the most important of all the Canadian exports, and comes from the rainy west and from the snowy east.

- (1) The eastern region extends from Lake Superior to Hudson Bay, and from Lake Winnipeg to the east of New Brunswick.
- (2) The western region is practically the islands and coastal district of British Columbia.
- (3) The 'lumber' trade owed its development to the fact that the supplies of timber from the Baltic to Great Britain were cut off during the Napoleonic wars.

3. The largest export is from New Brunswick, Quebec, and Vancouver Island.

- (1) Forests cover the north and north-east of New Brunswick, especially the basin of the Restigouche. The species of trees include spruce, cedar, and maple, the latter giving sugar as well as beautiful wood.
- (2) The combination of hemlock-spruce forests and pasture round Fredericton has given rise to a large leather

industry ; and half the capital of the whole province is said to be invested in saw-mills at St. John.

- (3) Forests also cover almost the whole of Quebec from the Ottawa to the Saguenay, and the rivers are extremely useful both for floating the 'logs' and for driving the saw-mills. The species include red and white pine, spruce, and birch. The Ottawa brings down the pine, mainly from Lake Temiscaming, while the Saguenay brings down the birch, mainly from Lake St. John.
- (4) The combination of hemlock-spruce and pasture has given the city of Quebec a very large leather trade ; and Ottawa has the largest saw-mills in North America, the mill-hands going up country 'log-cutting' when the river is frozen.
- (5) The western forests consist mainly of fir, cypress, and cedar. The Vancouver Island forests are the most productive and the most conveniently situated for export, but the great saw-mill centre is on the mainland at Vancouver.

4. Next to lumber in value stand the various pastoral products, including cattle, cheese, and hay ; and they come mainly from the maritime provinces and from the eastern slopes of the Rockies.

- (1) Of the maritime provinces, Nova Scotia has the mildest climate and most facilities for export ; Prince Edward Island produces very good grass, partly owing to the valuable deposits of 'mussel-mud' manure found off the shore ; New Brunswick has dyked lands along the Bay of Fundy, which produce rich crops of grass under the natural manure of the sea-floods.
- (2) Ontario, which in climate is really a 'maritime' province, is the largest exporter of cheese in the world ; its soil is splendidly watered, and carries heavy crops of roots, and the climate is eminently suited to cheese.
- (3) In Alberta the number of streams, the slope of the land, and the climate are all extremely favourable to cattle-

pasturing, especially round Calgary. In the east of Canada the snowfall necessitates the housing and artificial feeding of the cattle in winter; but the Chinook winds greatly modify the climate of Alberta, and the district is too dry to have a heavy snowfall.

- (4) The dryness converts some of the natural grasses, *e.g.* the 'Buffalo' and the 'Bunch' grasses, into hay while they still remain uncut. Consequently, the cattle can generally feed over the ordinary pastures in winter, thus getting exercise in the fresh air and requiring little or no housing or house-feeding.

5. The grain is mainly wheat and barley.

- (1) The wheat comes from the magnificent prairies west of Winnipeg, especially from Assiniboia and Manitoba, the richest returns being gathered in the Qu'appelle and the Red River valleys.
- (2) The barley comes almost entirely from Ontario, and goes across the Great Lakes to Philadelphia, where the deposits of anthracite coal have given rise to a very extensive brewing industry.
- (3) Oats are also grown, especially in Ontario and Prince Edward Island, where, like the hay, they are very useful in the breeding of horses for the United States.

6. The great fruit areas are Nova Scotia, Ontario, and British Columbia.

- (1) Nova Scotia produces the finest apples in the world. The centre of the industry is Minas Basin, where the forest-clad hills keep off the fogs and storms from the north-east; the late spring prevents excessive making of wood, and the short autumn prevents waste of sap, while the hard winter kills the usual parasites; the dry climate is very favourable to the fruit both before and after picking; land is cheap, and markets are near—in the great cities of the eastern States,

- (2) The Hamilton 'peninsula' of Ontario produces very fine peaches and grapes, as well as apples ; the low level, the almost 'marine' climate, the latitude (that of Marseilles), and the friable shale of the soil are all exceptionally favourable.
- (3) British Columbia produces pears that rival even those of California. The soil round New Westminster is exceedingly fertile, and the climate is so fine that even oranges will ripen in the open air ; but the special product is pears, and the salmon-tinning industry provides all the necessities for a tinned-fruit industry.

Cf. the oyster-tinning industry of Chesapeake Bay in connection with the tinned-vegetable industry of Maryland.

Chapter 6. Minerals.

1. Canada is rich in mineral wealth, but at present the various minerals are scarcely worked at all except where there are special facilities for commerce.

- (1) This is most true of coal and iron, and least true of gold.
- 2. There are three great coal areas—in Nova Scotia, British Columbia, and the North-West Territories.

(1) The Nova Scotia coal is found both on the mainland and on Cape Breton Island, and in both places it is on or very close to navigable water. The island field is round Sydney, and is the nearest to Europe. The peninsula field is along Northumberland Strait, between Pictou and Springhill, and is the nearest to the Atlantic terminus of the trans-continental railway system ; it is also side by side with pure limestone and very fine iron ore at New Glasgow, Truro, and Londonderry.

(2) The British Columbia coal is also found both on the mainland and on islands, but only the island fields are on navigable water ; the mainland centre is Kamloops.

The Vancouver Island centres of Comox and Nanaimo are nearest to the Pacific terminus of the trans-continental railway, but the Queen Charlotte Islands have the best coal.

The facilities for shipping the coal at Comox and Nanaimo are really magnificent, and the coal-field is just opposite a mountain of magnetic iron ore in the island of Texada.

(3) The coal in the North-West Territories is generally of poor quality, but of enormous extent ; much the best quality is found round Calgary, especially at Lethbridge, Banff, and Cochrane, *i.e.* just where the C.P.R. begins to climb the Rockies.

3. The only important iron-works hitherto have been at New Glasgow, Truro, and Londonderry, where there are the greatest facilities for smelting and for transport, and at Montreal ; but there are large deposits of ore in Ontario, Quebec, and British Columbia.

(1) The Ontario product is now being manufactured most successfully at Hamilton, where coal can be easily imported across Lake Ontario.

N.B.—There are also valuable oil-wells in the neighbourhood, especially between Petrolia and London.

4. The precious metals are mainly confined to the Cordilleran area, though gold is worked along the south coast of Nova Scotia, and both gold and silver are worked in Ontario along the north shore of Lake Superior.

(1) Most of the Cordilleran gold is found along the Fraser, Columbia, and Yukon rivers ; and the abundance of water and timber gives the British Columbian miners a great advantage over their rivals in almost every other part of the world, especially in West Australia.

- (2) The chief centres are the Cariboo district of the Fraser basin, the Kootenay district of the Columbia basin—where there are also rich silver mines—and the Klondyke district of the Yukon basin.
- (3) In summer the Klondyke fields can be reached by river steamer from St. Michael's, which is on the north mouth of the Yukon; but in winter there is no communication at all, and even in spring and autumn the passes across the Rockies from Juneau are difficult and dangerous. Cf. p. 27.

5. Besides the deposits of gold, silver, and oil, Ontario also contains rich deposits of copper and nickel.

- (1) The copper is found in Algoma, along the north shore of Lake Huron, and the branch line of the C.P.R. from Sudbury to Sault St. Mary runs through the district.
- (2) The nickel lies also along the same line of rail; the deposit is the richest in the world, and is of immense importance to a naval power like Great Britain.

6. Amongst the other minerals of Canada are gypsum and apatite—two compounds of lime which are valuable as manures—and asbestos.

- (1) The gypsum is exported chiefly from Windsor (N.S.), but there are also rich deposits along the Tobique River (N.B.) and on the 'isthmus' between Lake Ontario and Lake Huron.
- (2) The apatite is exported chiefly from the Hull district of the Ottawa basin, but the deposit runs on westward into Ontario as far as Perth and Kingston.
- (3) The asbestos, which was discovered accidentally during a forest fire, is in Quebec.

Chapter 7. Towns.

1. Canada has only two towns with a population of over 100,000—Montreal and Toronto—but in a new country the importance of a place cannot be at all gauged by its population.

- (1) Montreal, the largest, is about the size of Bristol or Nottingham (220,000). Cf. p. 11.
- (2) Toronto, the second, is about the size of Newcastle (185,000). Cf. p. 12.
- (3) Quebec, which comes third, is no larger than Greenock or York, *i.e.* only one-third the size of Toronto.

2. Four towns have a population of from 40,000 to 50,000.

- (1) Hamilton, the largest of the four, is about the size of Barrow or Yarmouth. Cf. p. 12.
- (2) Ottawa, the second, is almost the size of Worcester or Oxford; it owes its importance mainly to its lumber trade (cf. p. 20), but partly to its being the political capital of the Dominion.
- (3) Halifax and St. John are about the size of Carlisle or Gloucester. Cf. p. 10.

3. Three other towns have more than 20,000 inhabitants—London, Winnipeg, and Kingston.

- (1) London, the largest of the three, is the size of Maidstone or Wakefield. It stands in the very centre of the fertile Ontario 'peninsula,' where it enjoys a beautiful semi-marine climate which is very favourable to fruit; it is within easy reach of navigable water on three sides—at the junction of the two branches of the Thames River, and commanding the two great through-routes by rail from Toronto to Chicago.

It is, therefore, a rising industrial and agricultural centre, its special industry being the refining of oil.

- (2) Winnipeg, which is the size of Perth or Londonderry, has

risen to very great importance in a very few years, owing to transport. It stands at the confluence of two navigable rivers, and at the junction of the C.P.R. main line with at least eight other lines, including two U.S.A. lines down the Red River valley. Cf. pp. 16, 17.

It is the meeting-point of east and west, forest and prairie ; it commands the fur trade from the north and the grain trade from the south ; in summer it has navigation up the Red River right into the United States, up the Assiniboine for more than 300 miles, and up the Saskatchewan to Edmonton—a distance, including Lake Winnipeg, of 1500 miles.

(3) Kingston is the size of Inverness or Waterford. Cf. p. 12.

4. Several other towns have between 10,000 and 20,000 inhabitants, of which Victoria and Charlottetown are the most important.

- (1) Victoria, which owes its importance to its magnificent harbour, is as large as Stirling or Taunton. Cf. p. 13.
- (2) Charlottetown, which is no larger than Kilkenny or Chelmsford, has a good harbour on the most sheltered coast of Prince Edward Island, looking towards the most densely peopled part of Nova Scotia ; and it is the natural centre for the railway system of the island.
- (3) Guelph and Brantford are twin agricultural towns in the fertile Ontario ‘peninsula,’ and they are about the size of Warwick or Forfar ; Hull is a mining and lumber centre of the same size on the Ottawa.

5. There are several quite small places, especially on the coast and in the mineral districts, which must eventually become very important ; but the only small towns of much importance at present are Fredericton, Regina, and Calgary.

- (1) Fredericton stands at the head of navigation for large steamers, which is also the lowest point at which the St. John is bridged ; it is the size of Selkirk or Kil-

larney (5500), and is the political capital of New Brunswick. The district round is divided between pasture and hemlock-spruce forests, and this has given rise to a leather trade. Cf. p. 20.

- (2) Regina is an important station on the C.P.R., but is a tiny place like Wigtown or Oakham ; it is the meeting-point of the cattle-ranches of the 'plains' and the grain-fields of the 'prairies.'
- (3) Calgary is a mere village, and owes its importance to its position between the Alberta pastures and the valuable coal of the Bow valley—by which the C.P.R. climbs the Rockies.

6. Among the places which may be expected to make great progress in the immediate future, are Dawson City and Telegraph Creek.

- (1) Dawson City is the centre of the Klondyke goldfields, and stands at the confluence of the Klondyke and the Yukon.
- (2) Telegraph Creek is at the head of navigation on the Stickeen River, which will probably become the popular route to Dawson City, as the land journey from the Creek to Lake Teslin is very much easier—though 50 miles longer—than that from Dyea to Lake Tagish.

N.B.—The sea journey from Victoria to Dyea *via* Juneau and the Lynn Canal is 100 miles longer than that to Telegraph Creek *via* Fort Wrangell and the Stickeen River.

7. The total population of Canada is about 5,000,000, including about 1,300,000 persons of French descent and 120,000 Red men.

- (1) Of this total, Ontario, which is seven times the size of Ireland, contains considerably over 2,000,000.
- (2) Quebec, which is about the same size as Ontario, contains 1,500,000—mostly French.
- (3) British Columbia, which is much the largest province—being nearly twice the size of Ontario—contained in 1891 less than 100,000.

NEWFOUNDLAND.

Chapter 8.

1. The colony of Newfoundland includes the island itself and the dreary coast of Labrador from the west end of Belle Isle Strait to Cape Chudleigh.

(1) The colony has persistently refused to join the Dominion of Canada, and has treated the Canadian fishermen very badly. It has also involved the British Government in serious political difficulties by its attitude to the French fishermen, who, by the Treaty of Utrecht, have certain fishing rights off the coast.

2. The island has about 2000 miles of coast; and the two coasts that are exposed to the Atlantic waves and gales are extremely broken.

(1) Where these two coasts meet, the peninsula of Avalon has been almost severed from the mainland by the deep indentations of Placentia Bay and Trinity Bay—the latter being the great terminus of the Atlantic cables.

(2) The coast line is very rugged and fringed with islands, two of which—Miquelon and St. Pierre—unfortunately belong to France; and the French claim exclusive shore rights from Cape Ray to Cape Bonavista, *via* Belle Isle Strait—a distance of 450 miles on the most sheltered part of the coast.

(3) Many of the bays would make fine harbours in summer, but the only harbour of any importance at present is St. John's.

3. The value of the coast for fishing is very great, both round the island and along the 750 miles of Labrador that belong to Newfoundland.

(1) One-third of the whole population (about 200,000) is engaged in the fishing industry, and the export of fish products is a dozen times as valuable as that of all the other products of the colony.

(2) Of course, the cod fishery is much the most important. It is so largely confined to the Great Bank that the fishermen are known locally as 'Bankers.' The season lasts from June to the middle of November, and even the procuring of bait is so important that it has become a definite industry.

N.B.—The 'Bait Laws' have been used most effectively against the French 'Bankers.'

(3) The seal fishery comes next in importance, but is carried on solely for oil and skins, the seals not being of the fur-bearing kind; the season is from the middle of November to June, and the hunting grounds are the ice-floes along the coast of Labrador.

4. Amongst the other fish products are lobsters, herring, and salmon.

(1) Lobster-canning, which is a rising industry, has been another cause of difficulty with the French.
(2) The herring are most plentiful in Fortune Bay, and the salmon off the Gulf coast.

5. St. John's is the only harbour of any importance at present, and is both the political and the commercial capital of the colony.

(1) It is so deep that the largest vessels can enter at any state of the tide, but the entrance is so narrow that only one vessel can enter at a time.
(2) It is less than 1700 miles from Ireland, and the peninsula of Avalon has the best climate in the colony.

(3) It is the headquarters both of the cod fishery and of the seal hunting, and has thus a population as large as that of Perth or Lancaster (31,000).

6. The climate of the colony is very unpleasant, but not unhealthy.

(1) Owing to the presence of sea on every side, the extremes, even in the portion of the country farthest from the influence of the Gulf Stream, are not nearly so great as in Canada. For instance, the thermometer seldom falls below zero.

(2) The meeting of the cold Labrador current with the warm Gulf Stream causes constant fogs. Cf. p. 44.

(3) The south-west Anti-Trades bring a heavy burden of rain off the Gulf Stream; but, as the chief range of mountains—the Long Range—is in the extreme west, and does not present a full face to the south-west winds, the rainfall is less than it would otherwise be.

7. The surface of Newfoundland is rough and hilly, the hills rising to the height of Scaw Fell or Ben Lomond.

(1) The area is nearly as large as that of England without Wales, but a considerable portion is still unexplored; and, except on the Avalon peninsula, there is practically no settlement more than a mile or two from the coast.

(2) With such a surface and such a climate, agriculture is impossible except in a few favoured places round the coast and along the lower valleys of the rivers; indeed, fully one-third of the entire surface is covered with lakes and marshes.

(3) Consequently, the population is extremely limited, being no more than that of the single town of Hull; and the only place except St. John's that is more than a village, is Harbour Grace, a little town about the size of Monmouth or Killarney (5500).

- (4) A few thousand men are, however, employed in various mining industries. Copper is worked round Placentia Bay, and there are deposits of it also round Notre Dame Bay and of coal round St. George's Bay ; but both the latter are on the 'French shore,' where the Newfoundlanders cannot go.
- (5) The only other industry of any importance is lumbering. Timber, mainly pine, is found along most of the rivers, *e.g.* the Exploits and the Humber ; and the amount of water-power is favourable to the development of the industry. Unfortunately, however, some of the best timber, like some of the best agricultural land, is found along the disputed western coast ; and access to it from the land side has hitherto been practically impossible.

N.B.—Quite recently a railway has been constructed right across the island, and this will probably give a great impetus to the various land industries.

THE BERMUDAS.

Chapter 9.

1. This group of islands is of coral formation ; and, thanks to the Gulf Stream, it is in a higher latitude than any other similar group in the world.

- (1) The coral formation is so porous, and the islands are so small, that there are no fresh-water springs ; and, therefore, the water supply for drinking purposes depends on rain.
- (2) The Gulf Stream gives the islands a wonderful climate ; the variation of temperature is very slight from winter to summer, and frost is unknown.
- (3) There are about 360 islands altogether, but only about 20 are inhabited ; and the population of them is only 16,000, mainly negroes.

2. The importance of the group is threefold :

- (1) Their climate makes them a favourite winter resort for the Americans.
- (2) It also makes them in spring the 'market-garden of New York.'
- (3) Their position and their good harbours make them an important naval centre.

3. The two chief harbours are St. George and Hamilton.

- (1) St. George, the great naval station, has the advantage of being just inside the 'Narrows,' which is the best passage through the coral reef.
- (2) Hamilton, which is on the largest island, is the political and commercial capital, and is defended from the west by another naval station on Ireland Isle.

4. The chief products are vegetables, but fruit and timber are also important.

- (1) Arrowroot, formerly the staple product, is now quite unimportant.
- (2) Its place has been taken by onions, potatoes, and tomatoes.
- (3) The most important fruits are melons and bananas, and the most important wood is the red 'cedar'—for pencils. Cf. p. 38.

BRITISH CENTRAL AND SOUTH AMERICA.

Chapter 10.

1. British Honduras is essentially typical of Central America. It has a low swampy plain along the sea and forest-clad mountains inland.

- (1) The coast is fringed with coral 'keys,' amongst which turtles are very abundant.
- (2) There are several navigable rivers, two of which, the Hondo and the Sarstoon, form convenient political frontiers on the north and the south. The most important river is the Belize, on the estuary of which stands the little town of Belize (6000=Dartmouth or Morecambe), the political and commercial capital.
- (3) The forests supply mainly logwood and mahogany, the timber being cut in the dry season and floated down the rivers in the wet seasons ; and the export depends on the height of the flood.

N.B.—The softening effect of the marshes rather spoils the quality of the mahogany.

- (4) The forest area supplies also coffee, india-rubber, and rosewood.
- (5) The lowlands produce henequen, sugar, and very large quantities of fruit, especially bananas and pineapples.

2. British Guiana, like British Honduras, consists of a low swampy plain along the sea and forest-clad mountains inland.

- (1) As the coast lands are practically made of mud brought down by the Orinoco and the Essequibo, and have intense tropical heat and a very heavy rainfall, they are extremely fertile, and produce enormous crops of sugar cane. Indeed, both Georgetown and New Amsterdam owe their importance almost entirely to the sugar trade ; and the former has given the name of its river —Demerara—to a particular kind of sugar.
- (2) There are two wet seasons—December to February and June to August—and the extreme humidity of the climate greatly increases the amount of rum that can be made from the sugar.
- (3) The wooded hills inland are an ideal site for coffee, and the forests supply all the most valuable kinds of tropical timber.

- (4) The mountains, especially the Sierra Acarai and Mount Roraima, facing directly towards the N.E. 'Trades,' have one of the heaviest rainfalls in the world, and contain some wonderful waterfalls, *e.g.* the Kaietur (820 feet high).
- (5) Gold exists in considerable quantities between the Cuyuni and the Mazaruni--with unlimited supplies of water and timber for working the mines.

3. From their character, the Falkland Islands (which include South Georgia) may be called the 'Orkneys of the South Atlantic.'

- (1) Their deeply-indented shores supply several excellent harbours, especially Port Stanley, which is a whaling station and a regular port of call for passenger vessels.
- (2) Their low elevation, ocean position, and exposure to all winds, give them a very even climate, with constant fogs and little sunshine. Consequently, their only important products are pasture and peat; and their chief industries are connected with wool, meat, and skins.

THE WEST INDIES.

Chapter 11.

1. The Caribbean Sea is rather larger than the Mediterranean, and played a very important part in the early days of colonisation.

- (1) It is closely shut in by the curved ridge on which the West Indies stand.
- (2) The barrier of the islands made the sea a natural marine fortress for the Spaniards, from which they were ejected only with great difficulty.
- (3) The best passages through the barrier are the Mona, between Haiti and Puerto Rico, and the Windward,

between Haiti and Cuba. Jamaica commands the latter.

2. The West Indies themselves are the summits of submarine mountains which originally connected North and South America, and they are ranged in two lines.

- (1) The inner line is still high enough out of the water to look mountainous, and is largely of volcanic origin.
- (2) The outer line has sunk very low, and has been brought to the surface of the water by coral formation.

3. Almost all the islands—except the Bahamas—are mountainous, but have low coast plains.

- (1) The Bahamas are a low coral group.
- (2) The Greater Antilles have ranges running through them from east to west, and rising to over 7000 feet in Jamaica, 8000 in Cuba, and nearly 10,000 in Haiti, *i.e.* from more than twice to more than three times the height of Scaw Fell or Ben Lomond.
- (3) The Lesser Antilles, which are really a line of volcanic peaks, rise to 4000 feet in St. Lucia, nearly 5000 in St. Vincent, and over 6000 in Dominica, *i.e.* from twice to three times the height of the Peak or Yes Tor.

4. All of the islands—except, again, in the Bahama group—are within the tropics, and have an essentially tropical climate.

- (1) The tropical heat is, however, greatly modified by the daily sea-breezes, the Trade winds, and the considerable elevation.
- (2) There are two seasons, the wet and the dry ; the wet season lasts from May to December, and the dry season from December to May.
- (3) If, in addition to the great heat and great moisture, there is also calm air for any length of time, the three conditions are present which give birth to hurricanes ; and

this often does occur in August and September, when the heat and the moisture are greatest.

- (4) The direction of the mountains, and their nearness to the sea, cause them to present such a full face to the N.E. 'Trades' at their wettest that the rainfall on their windward side is excessively heavy ; and, therefore, the leeward parts of the islands are much the healthier, especially in summer, and contain all the important towns.
- (5) The force of the Trade winds has caused all the windward coasts to be clogged with driven sand, so that all the good harbours are also on the leeward side. Cf. p. 38.

N.B.—The most exposed islands are, naturally, the healthiest, e.g. Barbados, Antigua, and Dominica—the last combining exposure with height and with a very porous soil.

5. The soil is very fertile almost everywhere—except, once more, in the Bahamas.

- (1) The coral formation of the Bahamas is covered with only a thin layer of sandy loam.
- (2) The soil elsewhere is largely volcanic, and therefore needs only heat and moisture to make it produce enormous crops.
- (3) The chief products are sugar, tobacco, coffee, cacao, and certain fruits, specially oranges, limes, and bananas.

6. *Jamaica* means the 'land of forest-rivers' ; and, like Cuba and Haiti, the island has a line of forest-clad mountains running throughout its entire length, from which innumerable streams flow northward and southward across low coastal plains.

- (1) On these plains immense quantities of sugar are raised, and Jamaica rum is still said to be the best in the world. The coffee of the Blue Mountains has a similarly high reputation, and there is also a very important orange and banana industry—mainly with the United States. Cf. p. 33.

- (2) Amongst the other products are various spices, drugs, and dyes (cf. p. 41), and salt, phosphates of lime, guano, and turtles from the dependent islands—the salt mainly from the Turks and Caicos islands, the phosphates and the turtles mainly from the Caymans, and the guano from Morant and Pedro Cays.
- (3) Kingston, which is as large as Gloucester or Carlisle (40,000), is the political and commercial capital. It stands immediately under the lee of the Blue Mountains, with their immense vegetable wealth ; it has a fine harbour on the land-locked bay of Port Royal, and it is the terminus of the double railway system which runs through the plantations of the interior.
- (4) The old capital of Spanish Town was destroyed by an earthquake, but is now an important railway junction between Kingston and the two ends of the island—Port Antonio and Montego.
- (5) The other places of importance are mainly busy little ports such as Savannah-la-Mar, St. Ann's, and Falmouth. The latter, like Port Antonio, suffered for a long time from being in a Maroon district, *i.e.* a reserve held by rebellious Spanish slaves.

Chapter 12. The Smaller Islands.

1. The smaller islands are in three groups—the Bahamas, the Lesser Antilles or Windward Islands, and the Leeward Islands.

- (1) The British Government use the absurd division of the *windward* islands into ‘Windward’ and so-called ‘Leeward.’
- (2) From this point of view the ‘Leeward’ Islands include from the Virgins to Martinique, and the ‘Windward’ Islands include from St. Lucia to Trinidad ; but, of

course, it is only the inner group along the Venezuelan coast that is really to *leeward*—of the Trade Winds.

(3) The British colony of the Leeward Islands is a federation of the five presidencies of Antigua, St. Kitts and Nevis, Dominica, Montserrat, and the Virgins ; the colony of the Windward Islands consists of St. Lucia, St. Vincent, Grenada, and the Grenadines ; Tobago is attached to the colony of Trinidad, and Barbados forms a separate colony by itself.

2. The Bahamas consist of several hundred islands (and thousands of reefs), with a total area as large as Yorkshire, but only twenty of them are inhabited.

- (1) They are of low coral formation, thinly covered with a good sandy loam, and lie directly on the path of the Gulf Stream, which accounts for their very existence so far from the equator.
- (2) The innumerable reefs, with their warm lagoons, are the site of important sponge, turtle, and pearl fisheries, and of salt, guano, and ambergris industries.
- (3) The larger islands produce very large quantities of fruit and fibre, especially pine apples and agave. Eleuthera is the chief fruit island.
- (4) Andros, the largest island, produces mainly the juniper or so-called pencil-*cedar*. Cf. p. 32.
- (5) Nassau, the capital, is a town of some 11,000 inhabitants (=Rugby or Kilkenny) on the island of New Providence. It is a favourite winter resort for invalids, and has a 'tortoise-shell' industry in connection with the turtle fishery.

3. The Windward Islands proper consist mainly of a series of extinct volcanoes shooting up through coral reefs, and therefore they have a peculiarly fertile soil. Most of them have a steep rocky shore with good harbours on the west, and a beach of coral sand banked up by the Trade winds on the east. Cf. p. 36.

- (1) Trinidad is more than twice as large as any of the others, having an area of about 1750 square miles—*i.e.* twice the size of Lanarkshire or Warwickshire or County Londonderry.
- (2) Dominica (290) is rather larger, and St. Lucia (270) is rather smaller, than Middlesex or East Lothian.
- (3) Barbados (166) is rather larger, and Grenada (133) and St. Vincent (132) are rather smaller, than Rutlandshire or the Isle of Wight.
- (4) Tobago and Antigua are about 110 square miles apiece, St. Kitts about 70, Montserrat and Nevis about 50, and Anguilla and Barbuda about 30.

4. Trinidad, the most southerly of the West Indian islands, commands the approach to the Caribbean Sea from the south and the approach to the Orinoco from the north.

- (1) The Gulf of Paria makes a splendid natural harbour, and supplies the deficiencies of the two sheltered roadsteads of San Fernando and Port of Spain, while the exposed coral beach on the east produces millions of coco-nuts.
- (2) A range of high hills runs right along the north coast, and a smaller range runs up the middle of the island.
- (3) The soil is very fertile, and produces sugar and tobacco—the former in enormous quantities—on the sheltered western plain, and coffee and cacao on the forest-clad hills; fruits and spices are also increasing in importance.
- (4) In the extreme south-west there is the asphalt lake of La Brea, one of the curiosities of the world. It has been producing pitch ever since the days of Sir Walter Raleigh, and some 50,000 tons are still taken out of it every year.
- (5) Port of Spain, which is as large as Eastbourne or Londonderry (34,000), is the political and commercial capital, and is connected with San Fernando by a railway along the coast. San Fernando has also a short line inland to Princes Town.

5. Dominica and St. Lucia are two very mountainous British islands separated by the French island of Martinique. Cf. Dominica between the two French islands of Martinique and Guadeloupe.

- (1) Both islands are in the shape of a narrow leaf, with a high ridge of mountains up the middle and with two bays on the west—a large one in the north-west and a small one in the south-west—Portsmouth Bay and Roseau in Dominica, and Port Castries and Soufrière in St. Lucia.
- (2) Both, too, are thickly forested, and grow all the typical West Indian products; but St. Lucia exports mainly sugar and logwood, while Dominica exports mainly lime-juice and coffee. St. Lucia has a particular ‘crystalline’ species of sugar-cane, which seems able to resist all climatic and insect plagues.
- (3) Port Castries, though no larger than Cockermouth or Killarney (5500), has the best harbour in the Windward Islands; and, therefore, it has attracted the headquarters of the British troops away from Barbados.

6. Barbados is, however, the most important British possession in the West Indies after Jamaica, thanks to its position, soil, climate, and population.

- (1) It is the most easterly of the islands, and thus has a specially breezy and healthy climate, though it is subject to hurricanes.
- (2) The healthiness of the climate and the fertility of the soil have attracted such a dense population that, as in Puerto Rico, even negroes are obliged to work—on the plantations or in catching and salting flying-fish; and it was originally colonised largely by Scots-men, who are always good colonists.
- (3) As the whole island is flat and low, it is simply covered with sugar plantations.

- (4) Bridgetown, the political and commercial capital, has a poor harbour, but is a flourishing little town, as large as Stafford or Dunfermline (21,000).
- (5) As the original headquarters of the British troops in the Windward Islands, the island was well provided with railways; one of the chief stations on the main line from Bridgetown through the south-east of the island, is for Codrington College, the only university in the West Indies.

7. Grenada, St. Vincent, and Tobago—like their neighbour, Barbados—and Antigua, in the exposed north-east, have a specially healthy climate.

- (1) Grenada is also so free from hurricanes that it is eminently suited for the production of spices and fruit, and it has a snug little harbour in St. George—on its leeward side. It is so healthy that it has a thriving cattle trade. Cf. Puerto Rico.
- (2) St. Vincent exports dye-woods, sugar, and arrowroot from Kingston—on its sheltered south-west coast.
- (3) Tobago is a forest-clad plain, which produces excellent fruit, arrowroot, and tobacco. Its chief port, Scarborough, is on the east coast, a characteristic position for a harbour that exports coco-nuts.
- (4) Antigua, which is covered with sugar and cotton plantations, has a more broken coast than most of the islands, which gives it a large choice of harbours. St. John is the seat of the Governor of the so-called ‘Leeward Islands,’ but Falmouth is the best harbour.
- (5) The volcanic islands of St. Kitts and Nevis export sugar and sulphur from Basseterre and Charlestown, and Basseterre also collects the salt and phosphates of Anguilla; and Montserrat exports its famous lime-juice from Plymouth.

BRITISH AFRICA.

Chapter 13. Political Divisions.

1. The total area of the British possessions in Africa is larger than Australia, and nearly as large as Canada.

- (1) Including the British 'sphere of influence' in Egypt and the two Dutch Republics, the area would be larger even than Canada.
- (2) The area of the largest possessions—British East Africa, British Central Africa, and British Nigeria—is not known with any approach to accuracy ; but the East African area is certainly over 1,000,000 square miles, and the Nigerian is certainly over 500,000.
- (3) At present the South African area is the most important, because of its command of the sea route to India and Australasia, its definite settlement, and its temperate climate.
- (4) Amongst the newly-acquired possessions, Central Africa is the most important ; it has the richest minerals and the most fertile soil, and commands the 'Cape to Cairo' rail and telegraph route.
- (5) The oldest possessions, Gambia and Sierra Leone, are also the least valuable ; the latter is about twice the size of Wales, and the former about the size of Cheshire or Dumfriesshire.

BRITISH TEMPERATE AFRICA.

Chapter 14. Cape Colony (Physical).

1. Cape Colony is of immense value to the British Empire, because it commands the most important trade-route in the water hemisphere.

- (1) Cape Town is the only harbour of real importance between St. Helena and Mauritius for India-bound vessels, and between St. Helena and Albany for vessels in the Australasian trade.
- (2) It is, therefore, the only convenient coaling-station for vessels before they enter the latitudes of 'The Roaring Forties.'
- (3) These two facts make the possession of Cape Town a sheer necessity for an empire which has the greatest navy in the world, and the security of which depends on its naval supremacy.

2. Cape Colony is three times as large as Great Britain, but has not as much coast as England alone; and very few of the existing harbours are naturally good.

- (1) The reason for this is the immense amount of alluvium brought down by the great rivers of the continent, and distributed by various currents along the coast.
- (2) The best natural harbour is Saldanha Bay, about 60 miles north of Cape Town; but, as it has neither supplies of fresh water nor communication inland, it has no value except as a refuge.
- (3) Table Bay is exposed towards the north-west, and is therefore not quite safe during 'Anti-Trade' gales; but it is of so much importance to the British mercantile marine that extensive harbour works have been constructed, and it has good communication inland.

- (4) Simon's Bay, by which also there is a good approach to Cape Town, is large and sheltered; but the entrance is dangerous, because Cape Agulhas extends a long way seaward beneath the surface of the water, strong currents sweep round the Cape, and the meeting of the cold Benguela current with the warm Mozambique current causes dense fogs. Cf. p. 30.
- (5) The best harbour on the rest of the Cape coast is Algoa Bay; but even that is exposed towards the south-east, the stormy quarter, and does not admit the largest vessels to Port Elizabeth. East London, Port Alfred, and Mossel Bay are simply roadsteads.

3. Cape Colony is of typical African formation—a large plateau rising abruptly in parallel terraces from a moist coast-strip to dry flat-topped mountains like 'Table' Mountain.

- (1) These so-called mountains are really the steep escarpment of the plateau, and run from east to west across the Colony.
- (2) The lowest terrace is very near the sea in the west and south, but towards the east retreats from 20 to 60 miles.
- (3) The third terrace leads to a plateau nearly half the size of England, called the Great Karroo—from the Hottentot name for a shrub that grows on it; and, as the average elevation of it is 3000 feet, the rainfall is too slight for anything except sheep pasture.

4. The Nieuwveld Mountains, a continuation westwards of the Draken-Berge, form the water-parting of the country.

- (1) The rivers that flow northward from them are fed mainly by thunder-rain; and they are, therefore, very variable in volume. Cf. the Orange.
- (2) The southward rivers, *e.g.* the Gauritz, Gamtoos, and Sunday, vary much less, and might be very useful

for irrigation ; but the sudden and violent floods to which they are subject, cause them to plough such deep channels that irrigation by gravitation—the only cheap method—is practically impossible.

- (3) The range rises in height (under different names—Winter-Berge, Sneeuw-Berge, and Storm-Berge) towards the east ; and this increase in height is accompanied by an increase in the amount of vapour brought landwards—off the warm Mozambique current. Consequently, the rivers, *e.g.* the Great Fish River, begin to have more permanent volume.

5. The climate naturally changes with the height and the distance from the sea, and changes still more importantly with the longitude.

- (1) The rains in the east fall in summer, while those in the west fall in winter ; and, therefore, *e.g.* at Grahams-town, the rain cools the heated air, and the clouds temper the sun's rays.
- (2) The damp heat of the south-east coast, *e.g.* at Port Elizabeth and East London, is as bad for Europeans as the consequent sour grass is for stock ; but the pure dry air of the inland heights, *e.g.* at Colesberg and Aliwal North, is magnificently healthy.
- (3) The cold Benguela current affects the climate unpleasantly in the west, and decreases the rainfall ; and, therefore, most of the towns are in the south-east, where the rainfall is sufficient for general agriculture.
- (4) The actual rainfall varies from about 40 inches at Grahamstown to about 5 in the north-west of the Great Karroo ; but there is a local rainfall of 30 inches at Cape Town owing to the height of the condensing medium (Table Mountain=3600 feet) and its nearness to the sea.
- (5) In connection with this rainfall there is an extensive and valuable salt industry. Cf. the salt-pans in the Sahara and the Kalahari deserts.

Chapter 15. Cape Colony (Commercial).

1. With such a scanty rainfall, it is obvious that agriculture must be extremely limited.

- (1) The average rainfall over the rich wheat lands in the Eastern Counties of England is not more than 30 inches ; but on a plateau in the latitude of Cape Colony, where both filtration and evaporation are very rapid, 60 inches would not be too much.
- (2) Even in the districts which have the heaviest rainfall, irrigation is a necessity ; and this is rendered difficult and expensive by the depth of the river-beds.
- (3) Wheat and maize are the only grain-crops, the wheat being naturally grown in the drier and colder south-west, while the maize is grown in the damper and hotter south-east. The best wheat comes from the Malmesbury plain ; most of the maize, or ‘mealies,’ comes from the district between Uitenhage and King William’s Town.
- (4) The vine is, however, eminently adapted to such a dry climate, and is said to grow more luxuriantly in the south-west than in any other part of the world. The most productive vineyards are on the warm, dry slopes of the lowest terrace, *e.g.* at Paarl, Stellenbosch, Constantia, and Wynberg (‘wineburg’). The proximity of these places to Cape Town, the ease with which cork-dust can be imported from Lisbon, and the nearness of Cape Town itself to London, have caused a large export of grapes.
- (5) Tobacco also grows well in the south, especially in the rich limestone valley of Oudtshoorn, where the shelter of the Zwarte-Berge and the Lange-Berge on the north and the south, the number of streams, the proximity to the sea, and the presence of extensive forests between the Lange-Berge and the sea, seem to guarantee permanent success to the planters.

N.B.—In such a treeless country these forests are specially valuable, and supply wood for wagon-building.

2. The pastoral wealth is much greater, therefore, than the agricultural, and is mainly in sheep and goats.

(1) The coast-lands, however, are suitable for cattle, especially in Transkei and Pondoland ; and there is a large demand for transport oxen for the wagon-traffic over the roadless plains of the interior.

(2) The goats are much more numerous than the cattle, and are of two kinds—native and Angora. The former are very hardy, but the latter are much the more valuable. Most of them are kept on the Upper Karroo and the eastern half of the Great Karroo, especially round Richmond and Graaf Reinet ; and mohair to the value of £500,000 is exported annually *via* Port Elizabeth.

(3) The sheep, like the goats, are of two kinds—native and Merino ; and in the very dry north-west the native is even preferred. Elsewhere the Merino is the most valuable animal in the country, and wool is exported to the value of about £2,500,000. The most important sheep farms are also on the Great Karroo, and there is great mortality amongst the sheep in a dry season ; but this is mainly due to bad farming—*e.g.* overstocking the land, keeping the kraals dirty, or wearing out large areas of good pasture by always bringing the sheep to the same kraal by exactly the same route.

(4) Ostrich-farming requires special knowledge and experience ; and, as profits are peculiarly dependent on the caprices of fashion, only wealthy capitalists can risk the possible heavy losses or the long waiting for gains. The centres of the industry are Uitenhage and Grahamstown.

3. The scarcity of fuel, which will probably prevent the Colony ever having any important manufacturing industries except tanning, has also hindered the development of the mineral wealth.

- (1) Coal does exist in considerable quantities in the Storm-Berge, *e.g.* at Molteno and Cyphergat, and can be easily *quarried* out of the hillsides ; but it is of very poor quality.
- (2) Copper is also found in various parts, and exists in valuable quantities in the old rock of Namaqualand. The richest deposits are at Ookiep, which is connected by a tramway with the roadstead of Nolloth.
- (3) Diamonds are, however, the great mineral product, and realize more than £4,000,000 a year. The chief mines are in the blue clay of Griqualand West, where archaic and mesozoic formations meet in the valley of the Vaal. Kimberley is the centre of the industry, and lies in the natural Line of Least Resistance for the transcontinental railway traffic.

4. The other important towns of the Colony are generally stations on the great trunk lines, which run from the various ports to the diamond and gold fields of the north.

- (1) In the North-Eastern Province, where all these lines converge, De Aar, Naauw Poort, Middleburg, and Cradock are all important junctions ; the lines of the Cape Town district converge on Worcester, as those of Port Elizabeth and Port Alfred converge on Alice-dale ; and Tulbagh, Beaufort West, and Cathcart command various passes by which the railways climb the terraces.

Chapter 16. Natal and Basutoland.

1. Natal is two-thirds the size of Scotland, but it has only 200 miles of coast and only one good harbour—on Port Natal.

- (1) This bay, however, is by no means an ideal harbour, as it has a shifting bar and is quite shallow ; but, as it is the best harbour on the coast, it monopolises

the trade of Natal, and does a large share of the Free State and Transvaal trade. Durban itself is well sheltered by a spur of land that juts out south-eastward into the bay.

2. The western boundary is the natural obstacle of the Draken-Berge, which vary from 6000 to 10,000 feet in height.

(1) The passes across the range, though few and steep, have therefore become very important. The Van Reenens Pass gives railway access to the Orange Free State, and the pass below Majuba Hill gives railway access to the Transvaal; and there is, fortunately, a valuable coalfield between the two along the Natal slope of the Draken-Berge.

3. The surface both of Natal proper and of Zululand, like that of Cape Colony, rises in steep terraces.

(1) The lowest terrace makes Pietermaritzburg 2000 feet higher than Durban, and the highest terrace provides the Tugela River with a waterfall of 2000 feet (in three plunges).

(2) The height of this innermost terrace, which is practically the Draken-Berge, and its nearness to the warm Mozambique current, guarantee much more rain than in Cape Colony. Even at Ladysmith, which is 100 miles from the sea, there are at least 24 inches annually.

(3) The steepness and the frequency of the terraces, though they make continuous navigation impossible even on the Tugela, offer special facilities for motive power and irrigation.

4. The climate is not nearly so healthy as in Cape Colony; the heat is great, especially in Zululand, and the rain comes mainly in the hottest season.

- (1) The smaller rainfall in winter is usually sufficient, as the sun's heat is less ; and the summer storms bring with them densely-clouded skies, which shade young plants from the sunshine.
- (2) The torrential character of the rains, however, has cut up the surface, as in Cape Colony, with deep 'kloofs' ; but, as the soil is neither so bare nor so dry as in Cape Colony, it is not washed away so easily.
- (3) Of course, the varied surface and latitude cause variety of climate. The coast-strip is distinctly unhealthy, especially in Tongaland, and has a very even temperature ; the uplands are perfectly healthy, and have snow and ice.

5. The products and occupations vary with the soil and the climate.

- (1) The coast-lands have semi-tropical climate and vegetation, and are generally richly charged with organic matter in the form of decayed vegetation ; this helps to keep the soil moist, to assimilate plant-food from the air, and to add to this food by generating carbonic acid.
- (2) These conditions are inimical to Europeans ; but the plants which they suit, *e.g.* maize, sugar, and tea, are such as necessitate the use of cheap coloured labour. And, as the Zulus are too proud and the Kaffirs too lazy to work, coolies are imported ; but wide planting of eucalyptus is greatly improving the climate for Europeans, and the natives do keep cattle.
- (3) The 'Midlands' contain a wide stretch of rich loamy soil from Greyton to Richmond, which is adapted to mixed farming. Horses and cattle are raised in large numbers, and are quite free from the lung diseases which affect them on the sugar plantations, and which necessitate the use of mules there ; the soil is damp enough for maize, especially round Pietermaritzburg, and the climate is dry enough for wheat.

- (4) The 'Uplands' are naturally most suited to sheep and goats, the goats thriving on the rougher land and requiring the less attention. The climate is, however, not suited to the natives ; and, therefore, the mohair trade is—unlike the cattle trade—entirely in the hands of Europeans.
- (5) These Uplands are, however, most important for the coal which is found in their palaeozoic formation. The most valuable mines are on the upper waters of the Buffalo basin, especially at Newcastle and Dundee.

N.B.—The Buffalo basin also contains the historic sites of Majuba Hill, Rorke's Drift, and Isandlhana.

6. The chief commercial centres are, therefore, on the coast, while the chief political centres are on the first terrace.

- (1) Besides the port of Durban, Isipingo and Verulam are sugar centres, Stanger and Port Durnford are interested in the tea-planting along the Lower Tugela, and villages are springing up round the fertile shores of Lake St. Lucia.
- (2) Besides the political capital of Pietermaritzburg, Ulundi is the old capital of Zululand, and Ekowe is the residence of the Chief Magistrate.
- (3) Ladysmith is the junction for the Free State and Transvaal traffic, and the commercial centre of the mining district.

7. Basutoland is a high plain about twice the size of Yorkshire, and produces the best wheat in Africa.

- (1) The reasons for this are that the soil is naturally fertile, especially round Maseru ; the country is very well watered by the Caledon and the Orange rivers ; and the height of the Draken-Berge entirely keeps off the summer storms from the sea.

Chapter 17. Bechuanaland.

1. The importance of Bechuanaland is due to the fact that it contains part of the great transcontinental route from north to south along the Eastern Plateau.

- (1) This communication is made exceptionally easy by the level surface and by the artificial character of the boundaries ; but, though the latter present no physical obstacle to commerce, the Orange, the Limpopo, and the Marico rivers form very convenient political boundaries. Cf. p. 33.
- (2) The Molopo performs a similar service between the old Crown Colony, or British Bechuanaland, in the south and the Protectorate in the north.

2. British Bechuanaland is a fine plateau about the size of England, rising to a height of 5000 feet.

- (1) This height and the dry air make it very healthy ; and, as there is also excellent pasture, the plateau forms an important basis for the British position northwards to the Zambesi.
- (2) Politically, it is now part of Cape Colony ; but, geographically, it has more in common with the Bechuanaland Protectorate, and falls naturally under the area of the Capricorn Calms.

3. The country is divided into two unequal parts by the line of hills which runs due north from Kheis to the Molopo.

- (1) West of the hills the land is a waste, forming part of the Kalahari desert ; it has no rain except during occasional thunderstorms ; and its vegetation is largely limited to plants with deep tuberous roots, in which they can store up the little rain that does fall.

- (2) The eastern part is also very dry; but the soil is naturally fertile, the summer rains (25 inches) might be stored, and irrigation produces very large crops of maize and millet, especially in the Hart basin.
- (3) The political capital is Vryburg; but both Taungs and Mafeking are more important, as they have the advantage of rivers—the Hart and the Molopo—as well as the railway. Taungs trades (in maize, wool, hides, cattle, etc.) with Kimberley; and Mafeking, which is the largest town, controls the trade with the Protectorate and the Transvaal.

N.B.—The only town of any size away from this eastern border is Kuruman, which collects salt from the desert. Cf. Tandeni in the Sahara.

4. The Protectorate, like the Colony, is divided into two unequal parts by a continuation northwards of the same line of hills.

- (1) West of the hills stretches the Kalahari desert, in which the bushmen manage to keep herds of native sheep and goats. There is also some mineral wealth, including salt and gold.
- (2) Eastward the country gradually changes from desert into valuable pasture, *e.g.* between Molepolole and Palapye, and then into valuable agricultural land, *e.g.* between the Notwani and Limpopo rivers, where there are special facilities for irrigation.
- (3) There are only two towns of importance, the frontier market of Kanya and the political centre of Palapye. The latter, King Khama's capital, is quite a new town, but has a population of over 30,000. Shoshong used to be the capital, but in 1889 Khama transferred his town bodily to the healthier site of Palapye, where both the air and the water are of the purest, and where the porous sand and the dry air materially assist sanitation.

BRITISH TROPICAL AFRICA.

Chapter 18. Western Africa.

1. The British Sudan includes the Gambia, Sierra Leone, Gold Coast, Lagos, the Niger Coast Protectorate, and the Royal Niger Company's Territory.

- (1) The Gambia Colony has an estuary which admits the largest vessels, and the river is navigable for 250 miles; but Bathurst is the only town, and ground nuts are the only important product.
- (2) Sierra Leone, like the Gambia, is entirely cut off from the interior by French territory; but the shelter of the Freetown peninsula makes the Rokelle estuary the best harbour along the whole coast, the position half-way between England and the Cape gives it political importance, and the deadly damp heat and the volcanic soil produce in luxuriance such products as oil-palms, kola, rubber, gum-copal, and pepper.

N.B.—The 'Grain' Coast takes its name from the kind of pepper known as '*Grains* of Paradise.'

- (3) The Gold Coast is not nearly so famous for gold as it was in the days when it gave a name to the English *guinea* coin, though it produces actually more gold-dust. Its most valuable products now are palm-oil, rubber, and ebony. Accra is its capital and its largest town, but Cape Coast Castle commands the only good road inland (to Kumasi and Bontuku).
- (4) Lagos itself is an island-town on the sandbank which separates the coastal lagoons from the sea; but, as it is the outlet for the palm-oil and palm-kernels of the Yoruba district, and has a safe harbour and easy communication inland, it has become the most important town on the Gulf of Guinea.

N.B.—The size of the Yoruba towns, *e.g.* Abeokuta, Ibadan, and Oyo, is a relic of the slave-trading days, when all the inhabitants of the country took refuge behind their walls.

- (5) The Niger Coast Protectorate and the Royal Niger Company occupy the rest of the Guinea coast up to the Kamerun frontier ; the political centre of the region is Asaba, the naval centre is Akasa, and the military and commercial centre is Lokoja. The Niger is, of course, the natural outlet for the Central Sudan ; but the local products of this lower basin are more or less limited to oil, rubber, and ebony.
- (6) The continental domains of the Royal Niger Company include the whole Sokoto empire and its dependencies. The chief centres are the political capital of Wurnu ; the river-ports of Rabba and Egga, of Loko and Yola ; the great markets of Kano and Yakoba ; and the caravan termini of Kuka, Katsena, and Sokoto.

Kano is the commercial capital of the Central Sudan, being the terminus of the chief Saharan route, and manufactures blue cottons from the product of the surrounding cotton and indigo lands. Rabba owes its importance to the transport round the Niger rapids, and Yola to the transport of ivory from the Adamawa forests.

2. Ascension, St. Helena, and Tristan da Cunha are the peaks of solitary submarine volcanoes.

- (1) Tristan da Cunha and Ascension rise from the submarine ridge which divides the South Atlantic into an east and a west basin ; but, while Ascension, like St. Helena, is not 3000 feet high, Tristan da Cunha is more than 8000, and is, of course, outside the Tropics.
- (2) Ascension is so devoid of water that it is practically barren ; but it is noted for its turtles, which support a 'tortoise-shell' industry, and its little port of Georgetown is used as a naval depot for the British West African squadron.
- (3) St. Helena is well within the area of the S.E. Trades, and has plenty of rain ; but reckless destruction of

timber has partly caused and greatly helped the washing away of soil by the rain, so that large areas are practically barren. The chief crop—as in Tristan da Cunha—is potatoes, and the chief industry is fishing. Jamestown, the capital, on the leeward—*i.e.* north-west—coast, is a coaling station.

3. Walvisch Bay, which is politically connected with Cape Colony, completely dominates German South-West Africa.

(1) It is no larger than Berwickshire or Bedfordshire, but it has the only good harbour for hundreds of miles along this coast, and commands all the best routes inland. As its possession is so essential to the success of the German colony, it will probably be exchanged for some portion of German territory elsewhere in Africa, *e.g.* the strip of German East Africa between Uganda and Lake Tanganyika.

Chapter 19. Eastern Africa.

1. British East Africa dominates the head waters of the Nile, and—through Zanzibar—almost all the coast trade.

- (1) Uganda is not very healthy, but is remarkably fertile, and produces excellent coffee; and the new railway from Mombasa will convert its political centres, *e.g.* Mengo, Kampala, and Mruli, into really important commercial centres.
- (2) All the centre of the country abounds in magnificent pasture, especially between Mount Kenia and the Victoria Nyanza; and the double advantage of lake navigation and railway transport will give a great impulse to the development of places like Ukassa and Ukala.

- (3) The coast-lands, especially between Taveta and Vitu, produce large quantities of rubber, which is exported *via* Wanga, Malindi, and Lamu ; but most of the trade of the country goes through Kismayu northward or Mombasa southward.
- (4) Mombasa, on a coral island joined to the mainland by a railway bridge, is the best natural harbour on the East African coast, and will be further benefited by the Uganda railway. As the bulk of trade still gravitates instinctively to Zanzibar, the old centre, Mombasa is, in the meantime, much more important than Kismayu ; but the Juba Valley is a natural ‘Line of Least Resistance.’
- (5) The importance of Zanzibar is largely due to its long monopoly of the East African slave-trade ; but it has a splendid central position opposite some of the best natural routes inland, and is extremely fertile. The city of Zanzibar stands on the west side facing the mainland, where its shallow roadstead is sufficiently sheltered by the island itself to make a fairly good harbour.

N.B.—The revenue of Zanzibar—as of its neighbour and dependency, Pemba—is mainly derived at present from a single crop, cloves, which are usually risky to cultivate ; but copra and chillies are becoming important.

2. Réunion, Mauritius, and its dependencies of the Seychelles and Rodriguez, are the highest points of a submarine bank. Cf. Ascension, p. 55.

- (1) Mauritius is a coral-girt, well-wooded area of volcanic hills, about three times the size of the Isle of Man, in the path of frequent cyclones ; and it has, therefore, a heavy rainfall, and is an ideal site for sugar. All its towns are ports, and distil rum—Savanna, Mahebourg, Grand River, and the capital of Port Louis ; Curepipe, on the water-parting of the Black River Hills, which run due north and south through the middle of the island, is a sanatorium during the summer rains.

(2) The Seychelles are a very beautiful archipelago, the home of the double coco-de-mer, which supplies their export of oil and copra. On the largest island, Mahé, vanilla is now being widely grown, and is exported from Port Victoria. Like the neighbouring coral group of the Amirante, the Seychelles have a delightful, if not very healthy, climate.

3. The southern shore of the Gulf of Aden is protected by British Somaliland and the island of Sokotra.

- (1) Somaliland has little beyond political importance ; but Zaila is the terminus of a caravan-route to Abyssinia, and Berbera and Bulhar also export ivory, gum, and spices.
- (2) Sokotra, too, has some commercial importance, exporting cattle and aloes from Tamarida ; but its great value is as another strategic position.

Chapter 20. British Zambesia.

1. British Central Africa has been developed from the natural sanatorium of the Nyasa highlands, *via* the Shiré River southwards and the Stevenson Road northwards.

- (1) The Stevenson Road was the natural result of Dr. Livingstone's work, but the whole expense of it from Lake Nyasa to Lake Tanganyika was defrayed by Mr. James Stevenson.
- (2) The earliest settlement was at Blantyre, but the capital is now Zomba ; and outposts have been developed at the various extremities of the Protectorate, *e.g.* Rhodesia on Lake Mweru, and Fort Rosebery on the Luapula river.

(3) The native trade in spontaneous products, especially the ivory of Kambombo and Senga and the rubber of Bandawe, has been developed, and various tropical and semi-tropical plants have been cultivated, *e.g.* sugar and cotton ; but the staple product is coffee.

2. Nyasaland produces the best coffee in the market, but the area for it is limited.

(1) In most parts the plant is not flourishing, owing to the absence of trees to shade the young shrubs, and to the fact that the rain falls at the wrong time. Moreover, the demand for labour on the plantations attracts the natives from portage, and yet cartage is impossible through the tsetse-fly district.

(2) The Bandawe coffee is, however, the best in the world ; there is abundance of shade between Mount Kowirwi and Lake Nyasa, the average rainfall is about 7 feet and well distributed throughout the year, and the rich fibrous soil is exactly suited to the plant. There is also a first-rate harbour close at hand in Nkata Bay.

(3) Even in the Bandawe district, however, there is great need of a railway to get the coffee out of the country before the rains, which have spoilt many a fine crop.

3. Rhodesia is the unofficial name usually given to the important Matabili and Mashona plateaus which form Southern Zambesia.

(1) The importance of this area is due mainly to the fact that its height and its latitude make it more suitable for Europeans than any other equal area of tropical Africa.

4. The surface is mainly one continuous plateau ridged by the Matoppo and the Umvukwe Mountains, and rising towards the east.

- (1) The natural slope makes the plateau fall much more steeply towards the sea than inland ; and, as the seaward face, of course, also gets the heaviest rains, the deep eastern valleys, *e.g.* those of the Mazoe and the Sabi, are covered with very fertile alluvium washed down from the steep escarpment.
- (2) The gentle westward slope ends towards both the Zambesi and the Limpopo in low veld, which is magnificent natural pasture, though the presence of the tsetse-fly makes the Zambesi veld useless in the meantime.
- (3) The rest of the country is between 4000 and 5000 feet above the sea, which makes it particularly healthy, and is well watered, fertile, and rich in minerals.

5. The wealth of the area lies at present mainly in grain and gold.

- (1) The rich alluvial valleys along the eastern escarpment produce wonderful crops of all kinds of tropical plants, especially rice, sugar, and cotton ; but the staple products of the country are maize and Kaffir corn.
- (2) The presence of hemp and tobacco, as well as the cotton, growing wild, *e.g.* in the Hanyani, Umquadzi, and Mazoe valleys, proves that both soil and climate must be admirably adapted to fibres ; and, as the country is being developed mainly by a mining population, the tobacco will probably become extremely important.

N.B.—The natives smoke the hemp as well as the tobacco, but hemp-smoking causes certain death within quite a few years.

- (3) The watershed is mainly granite, but is intersected by areas of the best possible formation for gold, *i.e.* quartz and blue slate ; the chief rivers have abundance of water, and the 'mopani' bush provides sufficient timber for successful mining ; and there is good transport by rail *via* Buluwayo and the Cape, and *via* Umtali and Beira.

6. The Mashona plateau is rather the higher, healthier, more fertile, better watered, and richer in minerals ; and its natives are distinctly the more peaceful and industrious.

- (1) The Matabili are savage warriors who did not allow any real prospecting for gold, and who drove the Mashonas up into the lonely valleys of the north-east, where they could build cities of refuge on impregnable peaks of granite.
- (2) The Mashonas are peaceful to cowardice, and have worked both the mineral and the agricultural wealth. For instance, they manufactured at Mchesa the excellent hematite iron found in the Umquadzi valley ; they wove 'blankets' out of the wild cotton, and dyed them with the wild indigo ; they even made string out of one kind of bark, and mixed another kind with saltpetre to make a poor sort of gunpowder.

7. The towns are almost entirely centres of mineral wealth.

- (1) The two great political centres are Buluwayo and Salisbury, at opposite ends of the water-parting ; the other towns are along the great road from Bechuanaland to Salisbury, *e.g.* Macloutsie, Tuli, Victoria, Charter, and Hartley Hill.

N.B.—The ruins of Zimbabye are probably of Persian origin, but the wide-spread traces of old gold-workings have caused them to be identified with the Ophir of King Solomon.

BRITISH ASIA.

Chapter 21. Political Divisions.

1. The British possessions in Asia have an area much smaller than those in Africa, not reaching a total of 2,000,000 square miles ; but they are, of course, immensely valuable.

- (1) The Empire of India has an area of more than 1,500,000 square miles, *i.e.* a dozen times the size of the United Kingdom, and a population of nearly 300,000,000, *i.e.* more than Africa, North America, and South America all combined.
- (2) Though the other Asiatic possessions are not large, some of them are very important ; and they include a remarkable series of Imperial 'footholds'—from Cyprus, *via* Aden, Colombo, Singapore, and the Cocos Islands, to Hong-Kong—by which our commerce with the East is supplied with protection, coal, and telegraph facilities. Cf. p. 3.
- (3) If Europe is regarded as a peninsula of Asia, Gibraltar and Malta must be added to this list, with their garrisons of 6000 men each. Malta also has a magnificent harbour at Valetta, and raises large crops of excellent fruit and early vegetables, in spite of its violent winds.

INDIA.

Calcutta, 23° N. (=Havana).

Chapter 22. Surroundings.

1. India lies between an enormous area of land, and an almost equally enormous area of sea.

- (1) This is reflected in the climate, with its alternation of dry and wet seasons.
- (2) The sea area is entirely within the Tropics, and contains warm currents.
- (3) The land area is entirely outside the Tropics, and has a great average height.

2. The coast, though long, is not very accessible, for several reasons.

- (1) In many places, especially round the north and the east of the Bay of Bengal, the coast is simply swamp.
- (2) At the mouths of the great rivers, which would naturally give the easiest access inland, the strength of the river current and the conflict of sea and river make navigation difficult and dangerous, especially on the Hugli.
- (3) Between the various river-mouths the coast is monotonously regular, any possible harbours having been largely ruined by sand washed up by the sea and mud brought down by the rivers. Cf. p. 43.

3. Bombay is the only really good harbour in the whole country, but Calcutta, Karachi, and Madras are very useful.

- (1) Bombay is an island harbour—large, safe, and easily accessible—opposite the southern entrance to the Suez Canal, *via* the Red Sea.
- (2) It had very bad access inland until the construction of railways across the Western Ghats, and it has no local supplies of coal.

(3) It is the natural outlet for the trade of Western India, the Deccan, and the Central Provinces ; and, therefore, its chief exports are cotton, wheat, and opium. Cf. p. 71.

4. Karachi is the great wheat port of the Punjab, and also exports the products of the Western Himalayas.

- (1) It is far enough away from the mouth of the Indus to be safe from the constant currents and periodical floods.
- (2) The level of the Indus plain has made the construction and the working of railways and canals easy and cheap.
- (3) As the nearest point to Quetta and New Chaman, it has a considerable political and military importance.

5. Calcutta is one of the most dangerous and expensive harbours in the world.

- (1) Both the danger and the expense come from the terrific force of the river-current, especially during the summer rains ; and, when this fierce downward current meets a spring tide going up the river, the result is a 'bore' of the most dangerous description, travelling for 100 miles up stream at the rate of 18 miles an hour, and a height of some 5 to 10 feet.
- (2) As the natural outlet for the immense agricultural wealth of the Bengal alluvial plain, however, it has so much importance that it is worthy of its position as the capital of the Indian Empire.
- (3) It has the great advantage of being near the best coal-mines in India—at Raniganj, in the Damodar valley.
- (4) As the N.E. corner of Hindustan consists partly of deep alluvial plain and partly of high forest-clad mountains, with great heat and very heavy rains, the special exports from Calcutta are opium, rice, jute, tea, and indigo. Cf. p. 71.
- (5) It is the last of a dozen harbours which have stood on the Ganges-Brahmaputra delta, and all of which have been ruined by the river. The only other still remaining is Dacca.

6. Madras stands on a surf-beaten coast, without either a navigable river or necessary shelter.

(1) Its special trade is in teak from the Western Ghats, sugar from the Coromandel coast, and such products of Mysore as go eastward.

7. The land boundaries offer practically insurmountable obstacles to invasion and commerce, except in the north-west.

(1) The Himalaya Mountains run along the north for 1500 miles, with an average height of 17,000 feet, and an average width of 150 miles ; at least 100 peaks are at least *four miles high*, and there are miles upon miles of glacier.

(2) The north-east portion is defended by spurs from the Himalayas, overhanging a dense and deadly wet jungle.

(3) The north-west is accessible by two or three deep defiles across the Sulaiman Mountains, especially the Khaibar and the Bolan Passes.

Chapter 23. Surface and Climate.

1. Like the continent of Africa, India consists of a low oblong plain in the north, and a high triangular plateau in the south.

(1) The Tropic of Cancer divides the two areas in India very much as the equator divides them in Africa.

(2) As in Africa, the shape of the country makes the northern half larger than the southern.

(3) As in Africa, too, the northern half is an oblong running east and west, and the southern half is a triangle running north and south.

(4) As in Africa, again, the northern or continental half is lower, drier, and hotter than the southern or peninsular half.

(5) The northern area includes politically, but not geographically, the dry, dreary plateau of Beluchistan on the west, and the rich river-valley of Burma on the east.

2. The Indo-Gangetic basin is one enormous plain—Hindustan—shut in by mountains everywhere except in the S.W. and S.E.

(1) The mountains in the north, being of gigantic size, supply the water for the magnificent rivers of Northern India, on which the very existence of Indian commerce and agriculture depends.

(2) The ‘mountains’ which separate the estuaries of the Indus and the Ganges include the Vindhya range, but are really the high northern edge of the peninsular plateau.

(3) The pace and volume of the rivers, and the height from which they fall, cause them to carry down an immense amount of alluvium, which is invaluable for agriculture; and the low level of the plain offers every facility for irrigation and communication.

3. The peninsula of the Deccan is practically a continuous plateau shut in by mountains.

(1) On the west the Ghats are high, steep, and very near the sea; and, therefore, they are a formidable condensing medium to wet winds from the S.W., and a formidable obstacle to commerce.

(2) The Eastern Ghats, being low and discontinuous, present little obstacle to winds or commerce.

(3) As the double northern range—the Vindhyas and Satpuras—run east and west, they present little obstacle to the S.W. winds; and the valleys of the Narbada and the Tapti, and the Khandwa depression across the Satpuras, greatly facilitate communication.

N.B.—The *Great Indian Peninsula Railway* (G.I.P.) follows the Khandwa route, Khandwa being a junction for Allahabad, Benares, Delhi, etc.

(4) The Nilgiri Hills, in which the two Ghat ranges meet, are nearly 9000 feet high, *i.e.* twice as high as Ben Nevis; and thus they have become one of the most important sanatoria in India. Fortunately, just south of them there is a very curious defile, the Gap of Coimbatore, which separates them from the still higher Cardamum Mountains, and which gives easy communication, *e.g.* between Calicut and Trichinopoly or Madras.

4. The three great rivers of Hindustan all start near together in a lake district on the north of the Himalayas, and supply the soil, the manure, the moisture, the drains, and the highways of carriage for all the wealth of the Indo-Gangetic plain.

(1) The Indus is usually navigable for small vessels for 900 miles—up to Attock ('Limit'), but it brings down so much mud that it is often choked up; and, therefore, its great and permanent value is for irrigation. With its five chief tributaries, it has made the Punjab ('Land of Five Rivers') one of the wheat granaries of the world.

N.B.—The absence of large towns along the Indus is significant of the character of the river. Contrast the Ganges.

(2) The Ganges, though nominally the main stream, starts on the south of the Himalayas, and is inferior in length and volume to its Ghogra 'tributary,' which starts on the north. (Cf. the Mississippi and the Missouri, the Danube and the Inn.) The Ghogra supplies the volume and the mud, while the Ganges is the more useful for navigation, especially as far as Cawnpur; in fact, the whole course of 1200 miles from Hardwar, where the river drops on to the plain, to the ocean is of more or less value for navigation.

N.B.—The distance from Allahabad to the source of the Ganges is less even than that to the source of the Jamna.

(3) The Brahmaputra has the greatest volume and pace of all the Indian rivers. Indeed, its force is quite uncontrollable, so that in the meantime it is less useful than the Ganges and the Indus.

N.B.—The upper course of the river, 1000 miles in length, under the name Sanpu, is not in India at all.

5. The cross ranges on the northern edge of the plateau receive enough rain to give birth to three considerable rivers in the Narbada, Tapti, and Mahanadi.

(1) All these are invaluable to agriculture; their valleys offer natural routes for railways, the direct route from Bombay to Calcutta running for miles along the Tapti; the valleys of the Narbada and the Tapti have a distinct effect on the climate (cf. p. 66); and the Narbada, like the Ganges, is a sacred stream.

6. The principal rivers of the plateau itself are the Godaveri, Krishna (or Kistna), and Kavari.

(1) The Godaveri, the largest of them, is more than four times the length of the Thames, and about the same length as the Indus. They are all more or less useless for navigation, but invaluable for irrigation; and they all form deltas of inexhaustible fertility.

7. The Irawadi is becoming one of the great commercial highways of the world.

(1) It is navigable almost up to the Chinese frontier, Bhamo being the head of navigation, and practically attracts the whole population of Burma to its banks, especially along the 400 miles between Rangoon and Mandalay.

8. As India stretches for nearly 2000 miles from north to south, and varies in height from a few feet below to five and a half miles above sea-level, the climate also varies greatly.

(1) This variation depends much more on longitude and elevation than on latitude ; the average temperature of Hindustan is actually higher than that of the Deccan, and the difference between the Thar Desert and Bengal is greater than that between the plain and the plateau.

9. The regulating factor is the distribution of the Monsoons.

- (1) From May to September (more or less inclusive), the updraught from the heated continent draws the S.E. 'Trades' across the equator right up to the Himalayas, the rotation of the earth deflecting them north of the equator, so that they reach India as S.W. Monsoon winds.
- (2) During the 'northern' winter the N.E. Trades blow regularly from the Tropic to the Equator, and are called the N.E. 'Monsoons.' They are naturally dry winds, but towards the east they gather sufficient moisture off the Bay of Bengal to deposit a fairly heavy rainfall on the low Eastern Ghats. Cf. the N.E. of Ceylon.
- (3) As the S.W. winds come over hundreds of miles of tropical sea, they arrive saturated ; and, as they naturally deposit their burden towards the N.E., the heaviest rains are on the Western Ghats and on the Khasi Hills. On the latter, Cherra-Punji has recorded an annual rainfall of more than 22 yards.

N.B.—This S.W. Monsoon is deflected up the Ganges valley as a S.E. wind by the great wall of the Himalayas.

- (4) The whole Indo-Gangetic basin may, therefore, be divided into five areas—dry hills and dry plains in the N.W., damp hills and damp plains in the N.E., and a medium climate with a medium elevation on the water-parting of the Delhi ridge.
- (5) As the Deccan is entirely within the Tropics, the sun heat is always great, though modified by the height,

and the length of the day varies very little. In the south the difference of time between the longest and the shortest days is only one hour, and the difference of temperature between the hottest and the coldest is only 5° or 6°.

- (6) Where the level is so low that there is absolutely no condensing medium, as in Sindh, or where mountains entirely anticipate the wet winds, as in Mysore, there are areas of desert and semi-desert. Cf. The Thar.

Chapter 24. Productions.

1. The vegetation, both indigenous and imported, varies with the climate.

- (1) For instance, dry hills produce wool, and dry plains produce wheat; damp hills produce tea, and damp plains produce rice.
- (2) In a country with such a large area of alluvial plain, with sufficient heat and moisture, the vegetation is almost sure to be more important than the mineral wealth.
- (3) Motives of economy, the climate, and religious scruples cause the vast majority of the people of India to live mainly on vegetable food.

2. The vegetable wealth is divided between agricultural, pastoral, and forest products.

- (1) The agricultural products include, especially, grain and fibre.
- (2) The pasture supplies, especially, horned cattle and wool.
- (3) The forests produce food, shelter, clothing,—timber for commerce and for domestic use.

3. The chief grains are rice, millet, and wheat; the chief fibres are cotton, jute, and tobacco.

- (1) Rice and millet form—with the fruit of the mango—the staple food of the natives. Both are nutritious and

prolific, but rice requires the more moisture; consequently, rice grows on all the deltas and low coast-strips, especially round the Bay of Bengal, while millet grows inland, especially in the province of Madras.

N.B.—Burma produces rice to the value of some £6,000,000 a year.

- (2) Wheat flourishes on the low dry plains of the Punjab and on the high dry tableland of the Central Provinces.
- (3) Cotton has the same climatic connection with rice as wool has with wheat; and so it flourishes in the Ganges valley and on the sticky 'black-soil' lands of Bombay, especially on the plains of Khandesh, North Berar, and Wardha—where the soil is a fertile decomposition of volcanic rock, and where the S.W. Monsoons have access *via* the Tapti valley. Cf. p. 66.
- (4) Jute grows better on the sand-banks of the Bengal rivers than anywhere else in the world, especially between Goalpara and Purniah, where the Brahmaputra more than repairs the annual ravages caused by such an exhausting crop.
- (5) The tobacco is grown mainly on the low lands along the Kavari, the Sabarmati, and the Irawadi, especially round Trichinopoly and Kaira.

4. Amongst the other agricultural products, the most important are oil seeds, tea, and opium—coffee, cinchona, and indigo being next in importance.

- (1) The oil seeds are somewhat a subsidiary crop to rice, and are in demand locally for food, outward application, and lighting purposes.
- (2) The tea requires iron and vegetable refuse in the soil, heat and moisture, and a slope steep enough to prevent the moisture from settling round the roots of the plant. Assam provides the best site for the lowland variety, especially round Silchar, Sibsagar, and Dibrugarh; and the Darjiling and Kangra valleys are the best sites for the highland variety.

- (3) The opium, like the tea and tobacco, has a political importance, because it gives local employment to a considerable number of workmen, and because it is a source of large revenue to the Government. The chief centres are Patna and Ghazipur.
- (4) The coffee comes mainly from the Ghat valleys of Coorg and Mysore, where the water supply is plentiful, the heat great, and the accumulation of vegetable refuse enormous.
- (5) The indigo, which also employs local labour, is grown mainly in Bengal, Behar, and Madras ; and the cinchona is planted largely to protect the seedlings in the Himalayan tea gardens, though it is very valuable in itself for its 'Peruvian bark.'

5. Pasture must be limited in a densely-peopled country like India, except where the rainfall is insufficient and there are no facilities for irrigation.

- (1) As milk is very important to an almost vegetarian population, cows are kept everywhere ; but the special demand for horned cattle for transport and field labour is supplied largely from the semi-desert land between the Luni river and the Aravalli Hills.
- (2) The dry hills of the N.E. feed sheep and goats, which are kept mainly for their wool ; most of the beautiful Kashmir 'wool' is 'mohair,' i.e. from goats.
- (3) The damp forested hills of the N.E. and the Malabar coast still harbour the elephant ; the sandy desert of Sindh requires the camel ; and the salt plains of Rajputana are famous for their wild asses.

6. The forest products include teak, sal, and deodar ; bamboo, mango, and palm.

- (1) The teak comes from the wet jungles of Bombay, Assam, and Burma ; the sal is characteristic of the drier climate of Central Hindostan ; and the deodar and

other cedars are sub-tropical trees, growing on the slopes of the Himalayas.

- (2) The bamboo and mango are two of the most useful products of India, the latter providing food (between the grain harvests) to thousands of peasants, and the former providing almost every possible kind of utensil and furniture.
- (3) The most useful palm is the coco-nut, which grows along the shores in the Tropics, and supplies fibre for mats and ropes. The date palm also is found—along with sandalwood—on the dry hot plains of the Deccan, especially in Mysore.

7. The minerals, though much less important than the vegetation, are valuable, and include coal, salt, oil, tin, gold, and precious stones.

- (1) The coal is found in the Damodar and Narbada valleys, and in the hills of Chutia Nagpur, where it is very useful for the two railway routes from Bombay to Calcutta. There is also some in the Godaveri valley, near the main line from Bombay to Madras ; and a few small fields—of excellent quality—have been found in the N.E. of Assam.
- (2) The salt is dug from the ‘Salt Range’ in the N.W. of the Punjab, especially at Kohat, and evaporated along the coasts and from the brine lakes of Rajputana.
- (3) The petroleum is found chiefly in Burma and Upper Assam ; and there are rich deposits of tin—the characteristic metal of the Malay Peninsula (cf. Queensland and Tasmania)—in the Tenasserim district of Burma.
- (4) The gold is found mainly in Mysore, and the bulk of the precious stones from the Deccan and Burma (rubies).

Chapter 25. Towns.

1. As the natural resources were not such as to attract the inhabitants into large industrial centres, the sites of the old towns were chosen for political and other reasons.

- (1) Easy defence implies the protection of hills or the isolation of water.
- (2) Facilities for obtaining food are found on fertile soil and near good fishing rivers.
- (3) Superstition made certain curious places sacred.
- (4) Natural wealth in salt, or flint, or clay, was useful for food, weapons, and household utensils.
- (5) Trade is carried on along natural 'lines of least resistance' by rivers, valleys, passes.

2. Calcutta contains rather more, and Bombay rather less, than a million inhabitants.

- (1) Calcutta is essentially mercantile, though there are important jute and paper industries. It is the largest city in the British Empire except London. Like most Indian cities, it has a White and a Black part. It was the creation of the British 'adventurers'—where the gigantic agricultural wealth of Bengal must converge to leave the country. Cf. p. 64.
- (2) Bombay is also a British creation. It is really a more important commercial centre than Calcutta, and has also great industries, especially cotton. Cf. p. 63.

3. Madras has rather more, and Haidrabad has rather less, than 450,000 inhabitants.

- (1) Madras was also of British creation, but is hopelessly lacking in the requirements for a great mercantile or industrial centre. It is, therefore, relatively a literary and professional centre.

(2) Haidrabad, the capital of the principal Deccan state, was founded on a small plain, watered by a fair-sized river, within easy reach of the Golconda diamond mines, and surrounded by a ring of defensive hills.

4. Lucknow contains rather more, and Benares rather less, than 250,000 inhabitants.

(1) Lucknow owed its site to the caprice of a local chief, and the industrial arts fostered by an Oriental court still linger. Its position has made it in modern times a natural railway junction, and its history in connection with the Mutiny made it an important military centre. Its commercial value would be greater if the Gomti were not so deserving of its name, 'The Winding One'; but the land round is so fertile that it has been called 'The Garden of India.'

(2) Benares, the oldest city in India, owes its importance mainly to historical associations. It is considered very sacred by the Hindus, and its riverside 'Ghats' or stairs are haunted by 'holy' men of unique filthiness and deformity. It is very convenient to the sacred Ganges, and is a railway junction.

5. Seven other cities have a population of from 175,000 to 200,000.

(1) Delhi, from its position on the Indo-Gangetic water-parting, enjoys the arable advantages of the Ganges basin and the pastoral advantages of the Indus basin, and commands the through trade between the two. The scene of some most stirring incidents during the Mutiny, it stands on the ruins of ten cities !

(2) Mandalay owes its importance to the fact that, as Burma is very long compared with its width, all traffic and population converge on the great waterway. (Cf. Egypt and the Nile.)

- (3) Cawnpur, the scene of Nana Sahib's foul treachery, is a natural rail and river junction, which has attracted a large leather, wheat, and cotton trade.
- (4) Bangalore, on one of the highest parts of the Deccan plateau, has a fine climate ; and, as a natural railway-junction between Bombay, Madras, and Mysore, it has attracted a large population, especially of Europeans.
- (5) Rangoon owed its old importance to its sacred site, and now commands the mouth of the great Irawadi.
- (6) Lahore is the natural capital of the Punjab, the junction of four important railways—to Peshawar, Bombay, Calcutta, and Karachi (*via* Multan).
- (7) Allahabad, at the confluence of the two sacred rivers of Hindustan, was a great pilgrim centre ; and, as the terminus of the chief—and, till lately, the only—trunk line from the Ganges plain to the Deccan, it still attracts pilgrims, and after the Mutiny became the seat of the Provincial Government.

6. Six other cities have from 150,000 to 175,000 inhabitants.

- (1) Agra, an old Moghal capital, is a through-trade centre between Delhi and the Deccan, commanding the sudden bend in the Jamna.
- (2) Patna, the centre of the opium trade, has easy access by rail to the Himalayan sanatoria, the Nipal forests, and the saltpetre deposits of Behar.
- (3) Poona stands, at a height of more than 10,000 feet, at the eastern, *i.e.* the dry, end of the Bhor-Ghat pass across the W. Ghats. An old Maratha capital, it is still the headquarters of the Bombay Government during the rains.
- (4) Jaipur, a Rajput capital, has rail connection with the salt works of L. Sambhar, and supplied the white marble and red sandstone for the splendid buildings of Delhi and Agra.

- (5) Ahmedabad, an old Musalman capital on the fertile Gujarat plain, owes its present importance to the growing and weaving of cotton, and to its position where the Bombay and Baroda railway crosses the Sabarmati river.
- (6) Amritsar, the sacred headquarters of the Sikhs, commands the Kangra tea trade and the Kashmir wool trade, (manufacturing shawls of the wool,) and collects the wheat of its fertile surrounding plain.

7. Six other cities have a population of from 100,000 to 150,000.

- (1) Srinagar, on the alluvial plain of the Vale of Kashmir, with 60 miles of navigation on the Jehlam, is the centre of all the Kashmir trade, especially in wool and Tasar silk (from the jungles).
- (2) Nagpur, another Maratha centre, is on the direct line from Bombay to Calcutta, and has a branch line through the splendid cotton lands of the Wardha valley.
- (3) Baroda was more important when it controlled the trade between the coast and the interior, as Surat was before up-river harbours were displaced by ocean ports.
- (4) Gwalior is a typical old Rajput rock-fortress, as Karachi is a typical new British grain port (cf. p. 64).

8. Among the smaller towns, several have considerable military, historic, or industrial interest.

- (1) Simla, Darjiling, and Utakamand are summer stations.
- (2) Peshawar, Rawal-Pindi, Quetta, and Ambala are military stations.
- (3) Chittagong, Maulmain, and Negapatam are rising ports.
- (4) Tanjore, Bellary, Raipur, and Shikarpur are commercial centres, the latter collecting goods on the edge of the semi-desert tract for transmission to Kabul and Herat.
- (5) Sakkar stands where the Indus can be bridged ; Cuttack commands the railway crossing the Mahanadi

just above the delta ; Rurki is the headquarters of the Ganges canal system.

- (6) Calicut is the oldest port in India, and gave its name originally to *calico* ; the names of Arcot and Plassey are forever bound up with the famous story of the Conquest of India ; and Meerut was the scene of the outbreak of the Mutiny.

OTHER ASIATIC POSSESSIONS.

Chapter 26.

// 1. Ceylon, which is nearly as large as Scotland, reproduces closely the climatic and vegetable conditions of the south of the Deccan.

- (1) As an island, its temperature is rather more even, and its rainfall more certain ; but the dominating factor is still the Monsoons, and the eastern side is still much drier than the west. The alternation of sunshine and rain is so regular as to give rise to the proverb—"If you stick an iron bar into a macadamised road, it will blossom like Aaron's rod !"
- (2) The island of Rameswaram, and a series of coral reefs called Adam's Bridge, make an almost continuous division between the Gulf of Manar and Palk Strait ; the warm shallow waters of the Gulf contain the valuable pearl-oyster, and their shores are covered with coco-palms.

N.B.—As there is no channel deep enough for steamers, the surveys have been made for a railway across Adam's Bridge.

- (3) The whole island slopes up to the central mass of Adam's Peak (more than twice the height of Snowdon) ; and the gradient, the deep forest refuse, the heavy rain,

and the iron-impregnated soil, make it an ideal site for the tea plant. And, as usual, the cinchona accompanies the tea.

- = (4) The island contains very rich plumbago (graphite) mines ; the river gravel is rich in rubies and sapphires ; and the forests are said to be fragrant with nutmeg and cinnamon.
- = (5) Colombo, a magnificent artificial harbour, is the most central port of the Indian Ocean—‘the Clapham Junction of the Eastern Seas’ ; it controls almost the whole export trade of the island, and has attracted a population of 150,000—some of them from the old export centre of Galle.
- = (6) Trincomali—where the Mahavillaganga empties after its 150 miles run from the Horton Plains below Adam’s Peak—is a finer natural harbour than Colombo ; but its inaccessible situation leaves it without trade or population.
- = (7) The old capital of Kandy is a little highland town, with beautiful scenery, a superb climate, and one of the finest Botanic Gardens (at Peradenia) in the world.

✓ 2. Amongst the smaller possessions, Hong-Kong, Singapore, and Aden are of unique importance.

- = (1) Hong-Kong is a granite rock about the size of Holyhead Island ; but, with the British strip of Kowloon on the mainland, it shuts in one of the most magnificent harbours in the world—Victoria. Its only export is granite ; but its annual entry and clearing of shipping amounts to 14,000,000 tons, its annual trade is valued at nearly £50,000,000, its population is over 200,000, and its political is nearly as great as its commercial importance.
- = (2) Singapore is half-a-dozen times as large as Hong-Kong ; but, like Hong-Kong, it has a magnificent and absolutely free harbour on an enormously important highway of commerce. As it is very low, and has a very

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hot, damp climate, it is remarkably unhealthy, but can produce such plants as pineapple, gambier, and pepper.

- (3) Aden, though less important commercially than Hong-Kong or Singapore, is more important politically ; it is practically impregnable, and is one of the most valuable coaling-stations in the world. The island of Perim, the Kuria Muria islands, and Somaliland (with Sokotra, cf. p. 58) are politically attached to Aden, which is itself attached to Bombay.

3. The Straits Settlements reproduce the characteristic 'Malay' features, vegetation, and minerals of Southern Burma, with increased heat and moisture.

- (1) As in Burma, the low coast lands produce quantities of rice, the river valleys produce bamboos and all kinds of hard timber, and the mountains (which are 8000 feet high) yield about half of the total supply of tin in the whole world.
- (2) The peninsula also produces palms along both shores, especially the coco-nut ; rubber and rattans from the jungle ; gambier, pepper, and tapioca from its plantations ; and various kinds of spice.
- (3) Penang ('betel-nut') ousted Malacca as the chief centre of trade, thanks to the good harbourage between the island and the mainland of Wellesley ; but it has now itself been ousted by Singapore.
- (4) The Protected Native States—Perah, Selangor, Sungai Ujong, Negri Sembilan, Palang, and Johor—form an area nearly as large as Scotland. They all produce tin, especially Perah (in the Larut and Kinta districts) ; and their products include rubber, rattans, camphor, sago, and pepper.

4. The British area in 'Borneo' includes North Borneo, Brunei, Sarawak, and Labuan.

- (1) The island produces excellent camphor, tobacco, and coal ; coffee and pepper are also cultivated, and gold and

diamonds are found. Such curiosities as edible-nests and sea-slugs are collected for Chinese markets. Sandakan and Kuching are the chief towns.

5. The remaining British possessions include Cyprus, the Bahrein islands, and the Andaman, Nicobar, and Laccadiv groups.

(1) Cyprus consists of a long plain—the Mesorea—shut in on the north and the south by mountains, which cut off moisture from the interior. The central position of Nicosia is suitable for a capital; Famagusta, though very unhealthy, might be made a good harbour; Larnaka, though only an unsheltered roadstead, monopolises the trade, exporting dates, raisins, and salt—characteristic products of a dry island.

(2) The Bahrein islands export pearls from Manama; the Andamans are used mainly as a convict settlement, though Port Blair is one of the finest harbours in Asia; and the Nicobars, which are a part of the same submarine plateau as the Andamans, export coco-nuts, edible-nests, sea-slugs, and tortoise-shell (really 'turtle-shell').

(3) The Laccadivs, Maldivs, and Chagos islands are groups of coral formation. They export coir; and Diego Garcia, a large atoll in the Chagos group, is an important coaling-station. Christmas island, a similar atoll south of Java, exports phosphate of lime; and the neighbouring Keeling or Cocos islands export coco-nuts.

BRITISH AUSTRALASIA.

Chapter 27. Political Divisions.

1. The total area of the British possessions in the Pacific Ocean is just over 3,000,000 square miles.

- (1) Of this large area, nearly one-third represents West Australia, more than half of which is desert; and South Australia, also largely desert, is nearly as large as West Australia.
- (2) Queensland and New South Wales together occupy another million square miles, Queensland being twice as large as its neighbour.
- (3) Victoria, like New Guinea, is about the same size as Great Britain; and New Zealand is rather larger.

2. Although the Dutch had discovered most of Australasia in the seventeenth century, Captain Cook explored and opened up the most fertile parts, *e.g.* the east coast of Australia.

- (1) The arrival of the first 'convict' fleet at Botany Bay in 1788 is the beginning of its real history, and the settlement of the country seemed to the English people to replace the lost United States; the first goldfield was discovered in 1835.

N.B.—The Dutch kept their discoveries secret, partly from commercial jealousy of Spain, and partly because the island did not seem to them to be of much value; it is a land that could only have been developed by actual colonisation by a free race, and their whole system depended on slave labour.

AUSTRALIA.

Chapter 28. Surroundings.

1. Australia is an island, but it is so large that it may be regarded as a continent.

- (1) It is 25 times the size of the United Kingdom, and ranks next to Canada among the individual areas of the Empire.
- (2) The surrounding oceans, the winds, and the surface, all emphasise the continental rather than the insular element.

2. The coast line is singularly unbroken, which affects both climate and commerce adversely.

- (1) The indentations which do exist, *e.g.* the Gulf of Carpentaria and the Great Bight, have little effect on the 'solidarity' of the whole continent.
- (2) Warm currents wash the N., E., and S. coasts, which would carry abundant moisture inland if the coasts were broken and the winds blew regularly inland ; and which do encourage innumerable forms of marine life, *e.g.* turtles, oysters, sea-slugs, sponges, coral, etc., in the shallow waters.
- (3) The S. and W. coasts are the worst ; along the W. coast there is a cold current, off which evaporation is slight and slow, and the interior is a desert.

3. The South coast has two natural divisions.

- (1) The western half is an almost unbroken wall of rock for nearly 1000 miles. Albany, on King George's Sound, is the only real harbour, though Esperance Bay may become an important roadstead in connection with the Coolgardie and Kalgurli goldfields.

- (2) The eastern half is much more broken—Spencer Gulf, the Gulf of St. Vincent, and Port Philip being really valuable harbours; but abrupt cliffs, a heavy swell, and sunken islands make navigation difficult and dangerous.
- (3) Port Augusta and Port Pirie are fairly good harbours. The former is the outlet for a large pastoral and wheat area, and the terminus of the—as yet unfinished—*Great Northern Railway*; the latter is the chief wheat port of Australia, and has a large through trade to the N.S.W. silver mines at Broken Hill and Silverton.
- (4) Port Adelaide has a good natural harbour under the lee of Mount Lofty, and is more important than it would be if the mouth of the Murray river could be used as a harbour.
- (5) Port Philip is, perhaps, the most important harbour in the southern hemisphere. It has an area of 300 square miles, and is very safe; vessels can go up the Yarra into the very heart of Melbourne, and the city monopolises the whole export trade of Victoria in gold, wool, wheat, and butter.

4. The West coast, from Cape Leeuwin to Cape Leveque, is low, monotonous, and blocked by coral reefs.

- (1) The shallow water, the cross currents, and the summer hurricanes make navigation very precarious, especially in the north; and the north is also very unhealthy, and has very high tides (46 feet regularly in King Sound).
- (2) Shark Bay, the only important northern inlet, has a valuable pearl fishery. (Cf. the warm, shallow Manar Gulf, p. 78.)
- (3) In the south, Fremantle has been made into a fairly good harbour to accommodate the trade up to Perth, and has a large salt industry. (Cf. the north-west coast of India, p. 73.)

5. The North coast, from Cape Leveque to Cape York, has a vile climate, but several fine bays.

(1) The best is Port Darwin, the harbour of Palmerston, which has excellent accommodation for shipping, and is accessible by the largest vessels in any state of tide or weather. It is the junction of the Overland Telegraph with the Eastern Cable, and the destined terminus of the transcontinental railway.

6. The East coast has special advantages in the possession of some fine harbours and good coal, and the protection of the inshore water for 1200 miles by the Great Barrier Reef.

- (1) Brisbane commands the coal and wool trades of South Queensland ; Rockhampton commands the gold and cattle trades of Central Queensland ; Townsville commands the gold trade of Charters Towers and Ravenswood ; Cairns commands the tin trade of Herberton, and exports millions of bananas ; Cooktown—opposite the most northerly channel across the Reef—also has a tin trade, and exports rice, sugar, and sea-slugs.
- (2) The New South Wales ports are even more important, and some of them are wonderful natural harbours, *e.g.* Botany Bay, Broken Bay, and Port Stephens ; but they have been neglected for the artificial coal port of Newcastle and the unique harbour of Port Jackson.
- (3) Port Jackson is a large, deep, and perfectly safe harbour, with a natural wharf of freestone on each side of the promontory on which Sydney stands ; it has a splendid climate, immense agricultural and pastoral wealth behind it, and excellent coal on each side, at Newcastle and Wollongong.

Chapter 29. Surface and Climate.

1. Australia is a huge saucer-shaped plateau, with a rim of low coastland on every side except the south.

- (1) The edge of the plateau looks from below like a range of hills—rising abruptly from the coastline, only to break off abruptly on to the plateau ; and this has a very bad effect on the rainfall inland.
- (2) As the plateau sinks saucer-like inland, its shape favours the accumulation of water underground in the limestone of which the country is largely composed ; but the dry soil and the great heat give surface water very little chance of sinking at all.
- (3) The strip of low coastland which is missing in the south, reappears in a line of sunken islands. (Cf. p. 84.)

2. These low coastlands are the best watered parts of the whole continent, especially in Queensland.

- (1) Even in the west, where there is a cold current, and where no regular winds blow inland, enough moisture is carried to the Darling Range to give excellent pasture between the hills and the sea.
- (2) Along the north coast, there is enough moisture to produce—in the tropical heat—even sugar and rice ; but the climate is very unhealthy, and the damp, hot, still air favours the development of hurricanes. Thursday Island is a fortified coaling-station, and the headquarters of the pearl fishery.
- (3) As the edge of the plateau is very near the sea, the coastal rivers are short and subject to sudden floods ; and along the east coast, where the S.E. 'Trades' blow directly on to the Great Dividing Range, much havoc is done by the floods to valuable agricultural land, and navigation is made impossible or very precarious.
- (4) The exceptionally heavy rainfall in Queensland is due to the fact that the S.E. 'Trades' are condensed by the 5000 feet of the Bellenden Ker Mountains.

3. The great Dividing Range forms the highest part of the plateau edge, and in Mount Kosciusko and Mount Townsend rises to about 7000 feet, *i.e.* twice the height of Snowdon.

- (1) The name 'Great Dividing Range' may be fairly applied to all the successive 'ranges' which divide the coast from the interior, the most important 'range' being the Australian Alps.
- (2) Even these Alps are practically below the snow line in such a latitude; and consequently the rivers which flow from them, even the Murray and the Murrumbidgee, though very useful for irrigation, are almost useless for navigation.
- (3) As the range entirely cuts off sea winds from the interior, there are vast areas of desert; and, as the great dryness is naturally accompanied by great and sudden extremes of climate, the deserts are deeply covered with the sand of disintegrated rocks.

4. The distribution of these deserts reflects the special characteristics of the surface.

- (1) As the length of the continent from east to west (nearly 2400 miles) is more than twice its average width from north to south (about 1000), some part of its surface is absorbing the sun's rays vertically in summer for three hours every day; and, owing to the earth's position in perihelion, the sun is 1,500,000 miles nearer to Australia in the 'southern' summer than to the Sahara in the 'northern' summer.
- (2) The absence of inland peaks high enough to condense clouds, and the tendency of the plateau edge to stop sea winds entirely or to deflect them into a higher stratum of atmosphere, increase the already excessive heat.
- (3) The absence of shade still further accentuates the evil, and combines with the radiation from the parched

interior to produce severe droughts ; and the unevenly distributed rainfall is apt to lead to destructive inundations at the end of every drought.

- (4) As each Tropic in turn is for half the year the centre of a belt of calms, no regular supplies of moisture can be carried to it during that half, even when it is not cut off from wet winds by physical obstacles.
- (5) Consequently, the Great Sandy Desert lies along one side, and the Great Victoria Desert along the other side, of the Tropic of Capricorn. (Cf. the Sahara and the Kalahari deserts in Africa.)

5. The river system, again, reflects all these peculiar features.

- (1) As in Africa, the desert is not a dead level, nor a sea of sand, nor entirely barren. Most of it is a low humpy plateau ; it contains mountain ranges as high as Snowdon, *e.g.* the Macdonnell (cf. the Tibesti Mountains) ; and a low sandy plain stretches across it from north to south (cf. the Libyan Desert).
- (2) The countless subdivisions thus created have their own—temporary—river systems, all of which end in salt basins (cf. the Saharan Shotts) wherever their water is not at once absorbed by the thirsty soil or lost by evaporation.
- (3) The one exception is the Murray system, which rises amongst peaks high enough and near enough to the sea to have snow lying on them for some months.

Chapter 30. Vegetation and Minerals.

1. Most of the indigenous vegetation is, therefore, of a semi-desert nature.

- (1) True desert vegetation consists of plants which, by lengthening their roots, or shortening their height, or thickening their bark, or toughening their leaves,

or presenting only the narrow edges of the leaves to the vertical sunlight, or secreting volatile oils, have adapted themselves to draw water from great depths or to resist the evaporating power of very dry air, *e.g.* cactus, acacia, eucalyptus, salt-bush, mallee-scrub, etc.

- (2) The eucalyptus and the salt-bush are particularly important. Both the 'gum' and the timber of the former are very valuable; and millions of sheep are fed on the salt-bush, especially in N.S.W. (Cf. the Karroo.)

2. With such a deficiency of rain and rivers inland, it is obvious that agriculture must be limited; and, as sheep pasture is less dependent on rain than any other pasture, wool is the greatest of all Australian products.

- (1) N.S.W., which practically monopolises the continental river system, is far ahead of the other colonies in the amount of wool which it produces.
- (2) As both heat and rainfall increase towards the N.E., Queensland is better suited to cattle than to sheep.
- (3) As the heat decreases, but the rainfall increases, towards the S.E., Victoria produces the best wool, especially on the volcanic soil of the Ballarat gold area; and this soil is also peculiarly well suited for dairy farming, especially round Benalla.

3. Agriculture is naturally confined to the edge of the plateau and the coastlands.

- (1) The cooler and drier plateau edge produces plants like wheat and the vine, and the latter is particularly profitable. Its long root enables it to resist drought, it requires industry rather than capital, the climate is perfect, and the stony slopes of the downs are an ideal site.
- (2) The best wine comes from the volcanic valleys of Victoria, *e.g.* Ararat, Mooroopna, and Rutherglen, and the downs of Queensland, *e.g.* Roma and Toowoomba—the

lower land, where the vines get 'baked,' producing the heavier vines ; and the best raisins come from the drier area of the Murray basin, *e.g.* Albury, Echuca, and Mildura.

- (3) The tropical coastlands produce sugar, maize, and bananas. The sugar naturally prefers the fertile, marly soil and intermittent salt-breezes of the S.E. 'Trades' coast, especially between Geraldton and Herberton, and round Townsville, Mackay, and Bundaberg. The maize grows most abundantly on the low lands between Brisbane and Rockhampton, and the bananas are specially productive round Cairns.

N.B.—Cotton, coffee, cacao, rice, and other tropical crops are raised.

4. Coal exists in abundance along the east coast, and most of it is of very good quality.

- (1) Newcastle, Illawarra, and Lithgow produce the largest amount and the best quality ; but the Ipswich and Gympie fields are also very useful.

5. The great gold colonies are Victoria, West Australia, and Queensland.

- (1) The historic mines of Victoria are round Ballarat, Castlemaine, and Bendigo (Sandhurst).
- (2) The modern El-Doradoes of 'Westralia' are Coolgardie and Kalgoorlie, where there is neither water nor timber at hand.
- (3) Queensland has three fields—Charters Towers, Mount Morgan (which has paid £4,500,000 in dividends since 1885), and Gympie.

6. Copper is the characteristic metal of South Australia, as silver is of N.S.W., and tin is of Queensland.

- (1) Moonta and Wallaroo are the chief copper centres, and have the largest smelting works in Australia—the

- old Burra mine at Kooringa and the Kapunda mines being worked out.
- (2) The silver comes from Silverton and Broken Hill, which are reached most easily *via* Port Pirie.
 - (3) The tin extends along the Queensland heights from Cooktown to Stanthorpe.

Chapter 31. Towns.

1. Melbourne and Sydney are the only really large towns, the former with rather more and the latter with rather less than 450,000 inhabitants ; and Adelaide has a medium population of about 150,000. (Cf. p. 85.)

- (1) Melbourne owed its rise to the extraordinary output of gold (£10,000,000 a year for 10 years in succession), and has maintained its position by deepening the channel from Hobson's Bay, so that steamers of 8000 tons can now reach the heart of the city.

2. Brisbane, Ballarat, and Bendigo (Sandhurst) are busy little towns of from 40,000 to 50,000 inhabitants.

- (1) Brisbane is a low, unhealthy city, exposed to frequent floods ; and its harbour is dangerous, and requires constant dredging. The town owes its importance to the rich pastoral and agricultural wealth of the Darling Downs, and the convenient coal-field of Ipswich.
- (2) Ballarat has been for 50 years the centre of the richest gold-field in the world ; and its beautiful climate and volcanic soil are a source of great pastoral and agricultural wealth, especially very fine wool.
- (3) Bendigo is the centre of another gold-field.

3. Perth, Newcastle, Geelong, and Kalgoorlie have populations of from 20,000 to 30,000.

- (1) Perth is the political capital of West Australia, and the natural centre of its inhabitable area.

- (2) Newcastle owed its rise to its large supplies of good coal at the mouth of the Hunter. It has a fine artificial harbour, and commands the valuable agriculture of the Hunter valley.
- (3) Geelong has a good natural harbour on the estuary of the Barwon and Corio Bay ; and its semi-marine climate and its nearness to the Ballarat wool district have made it much the most important centre of woollen industries in Australia.
- (4) Kalgurli is a 'gold town of mushroom growth.'

4. Some six other towns have populations of from 10,000 to nearly 20,000.

- (1) Broken Hill is simply a silver town. (Cf. its neighbour —*Silverton*.)
- (2) Rockhampton is the destined capital of Central Queensland, and the port of the Mount Morgan mines.
- (3) Fremantle had some importance as the harbour of Perth, with a valuable salt industry ; but its prosperity has been greatly increased by the development of the Kalgurli and Coolgardie gold-fields.
- (4) Parramatta is a residential suburb of Sydney, very famous for its oranges.
- (5) Goulburn, 2000 feet above the sea, on the main Southern Railway, is centre of the inland trade of N.S.W.

TASMANIA.

Chapter 32.

1. Tasmania is a heart-shaped island about the size of Scotland.

- (1) On the north and west coasts the only indentations of commercial value are the Tamar estuary and Macquarie harbour ; but on the south-east coast there are many, the best being the estuary of the Derwent.

- (2) Its surface is divided into two areas by the deep depression of the Tamar, Macquarie, and Coal rivers. (Cf. Caledonian Canal in Scotland.) The eastern area is largely filled by mountains, of which Ben Lomond is the highest (5000 feet); the western area is partly mountainous, rising in Mount Cradle to over 5000 feet, and partly a lake-strewn plateau.
- (3) The height, the island position, and the latitude of the Roaring Forties, combine to give it constant 'Brave West Winds,' with a heavy rainfall and an even temperature.
- (4) Tin is the characteristic metal, and is worked mainly at Mount Bischoff in the N.W., and Branxholme in the N.E.; and there is good coal in the Fingal basin.
- (5) The chief industries are sheep-rearing and fruit-culture. Hobart, the capital (pop. 25,000), and the chief port of the south, has numerous jam factories; Launceston (nearly 20,000), the chief port of the north, is the main wool and tin port.

NEW ZEALAND.

Chapter 33.

1. New Zealand is sometimes called 'the Britain of the south,' and there are several points of resemblance.

- (1) Its maritime position, coast line, division into two large islands, scenery, size, climate, and productions are all points of more or less similarity.

N.B.—Owing to the greater proportion of land north of the equator, the thermal equator or line of greatest average heat is about 6° N.

- (2) New Zealand is, however, much the nearer to the nominal equator; its north half is the hotter; it is much farther from the nearest land; it is in the centre of a water, not a land, hemisphere; and it draws some of its revenues from very different sources.

2. Its latitude, surroundings, and surface are very similar to those of Tasmania.

- (1) 'Brave West Winds' blow in 'The Roaring Forties' over thousands of miles of sea ; and this sea is for many miles westward, *i.e.* to windward, shallow and warmed by equatorial currents.
- (2) The meeting of the cold Antarctic water with this warm equatorial water, the great length of the colony compared with its breadth, and the division into two islands by Cook Strait, cause many parts of the country to be subject to severe gales.
- (3) In the west of the South Island, where the mountains abut directly upon the shore, there is no commercial harbour, though the fiords supply shelter ; and in the west of the North Island, where the mountains do not cut off communication inland so entirely, drift sand and the westerly gales spoil the otherwise good harbours, *e.g.* Manukau.
- (4) On the east coasts, where the islands themselves give shelter from the westerly gales, there are a number of good harbours—from Russell in the extreme north to Campbeltown in the extreme south.
- (5) The backbone of the colony is the parallel system of mountain ranges which runs from the S.W. corner up to the N.E. corner, hugging the west coast—as the Southern Alps—in the South Island, and trending towards the east coast in the North Island. In the latter there are also, to the west of the main system three remarkable volcanoes—Ruapehu (9000 feet), Egmont (8200), and Tongariro (7500) ; and along the line of Tongariro and Ruapehu there is the famous Hot Lakes District.
- (6) Owing to the narrowness and general hilly character of the North Island, and to the mountains presenting a full face to the wet west winds, the rivers are short, rapid, and liable to floods ; but the direction of the Waikato gives it greater length, and Lake Taupo

helps to moderate its floods, so that it is of some use for navigation.

- (7) As the Southern Alps reach (in Mount Cook) a height of over 12,000 feet, and are very near the west coast, they are the cause of very heavy and sudden precipitation, and are covered with glaciers ; and, though there are wide stretches of plain on the lee side, e.g. Canterbury, the volume and pace of the rivers make them useless for navigation,—even lakes like Wakatipu and Te Anau being powerless to neutralise the floods.

3. Pasture, agriculture, and mining are all important, the pastoral products being very valuable.

- (1) The insular climate, volcanic soil, and hilly surface are most favourable to English grasses ; but much splendid forest has been sacrificed to make room for pasture. Oamaru and Timaru are specially ‘mutton’ ports.
- (2) Wheat flourishes on the warm dry plains of Wellington and Marlborough ; oats does best in the colder and damper climate of Canterbury and Otago ; phormium, or native flax, grows along the low banks of the Waikato.
- (3) The chief coal mines are just behind the roadsteads of Westport and Greymouth, and the coal is of excellent quality ; and gold is found in the same district, especially round Reefton and Lyell, Kumara and Hohitika. It is also mined in the Coromandel peninsula and the Clutha valley.

N.B.—The abundance of water and timber on the windward side of the Nelson and Westland mountains makes the mining very cheap, and the mountains are so near the sea that hydraulic mining cannot devastate large areas of rich land, as it does, e.g., in California.

4. Auckland and Christchurch have from 50,000 to 60,000, and Dunedin and Wellington from 40,000 to 50,000 inhabitants.

- (1) Auckland has a double harbour, though the east port (Waitemata) is much better than the west (Onehunga),

and commands all the trade by rail and road across the isthmus between the two.

- (2) Christchurch is the outlet for the comparatively dense population of Canterbury, and has been provided with a fine artificial harbour at Port Lyttleton.
- (3) Dunedin has an equally good harbour in Port Chalmers, and monopolises most of the Otago trade.
- (4) Wellington is the political capital of the colony, and has a deep and land-locked, but somewhat windy, harbour in Port Nicholson.

OTHER POSSESSIONS.

Chapter 34.

1. Northward from New Zealand the floor of the Pacific is raised in two great curves, which come to the surface in two lines of islands.

- (1) The inner, or Melanesian, line contains Norfolk Island and the Solomon Islands, and ends in New Guinea; the outer, or Micronesian, line contains the Fiji, Tongo, Ellice, and Gilbert islands.
- (2) The Fijis are volcanic mountains, with admirable harbours behind barrier reefs; turtles and pearl oysters haunt the reefs, coco-palms and sugar plantations clothe the coastlands, and the forested windward sides of the mountains produce immense quantities of bananas. Sugar, copra, and bananas are exported from Suva and Levuka.
- (3) The Ellice and Gilbert groups are of low coral formation, and in South Sea talk are called 'the Low,' as opposed to 'the High' or volcanic islands. (Cf. the Bahamas contrasted with the Windward Islands, e.g. Dominica and Martinique.)

- (4) The Solomon Islands contain typical examples both of the low coral and of the high volcanic formation. San Christoval has a good harbour, and Ugi is a British coaling-station.
- (5) British New Guinea has an area as large as Great Britain. It is divided from the German area by mountains, the chief range—the Owen Stanley—rising in Mount Victoria to over 13,000 feet; and the southward, *i.e.* British, slopes of all the system are covered with timber, mainly cypress. The whole country is very well watered; its largest river—the Fly—is tidal for 100 miles, and more or less navigable for 500. The coasts of the Gulf of Papua produce turtles, pearls, and sea-slugs; and the unhealthy interior produces all kinds of tropical vegetation. The most central harbour is Port Moresby; the island harbour of Samarai commands the eastern trade, and the island harbour of Daru commands the western.

2. Besides these two submarine lines of elevation converging on New Zealand, there are two similar lines along the two tropics.

- (1) The northern, or Hawaiian, line contains no British possessions; the southern, or Paumotu, line contains Pitcairn Island and the Cook Islands; and a somewhat similar longitudinal rise, joining these two more important lines of elevation, contains a number of small British possessions, *e.g.* Manihiki, Malden, Jervis, Christmas, Fanning, etc., from which periodical visitors collect guano and coco-nuts.

THE UNITED KINGDOM.

Chapter 35. Introductory.

SURROUNDINGS.

1. The British Isles lie on the eastern edge of the Atlantic between 50° N. and 60° N.

- (1) This latitude guarantees a temperate climate, and the presence of water on every side further protects them from extremes and from sudden changes of temperature.
- (2) This eastern edge is the one towards which the southwest Anti-Trades blow from off the warm Gulf Stream, which ensures abundance of rain, especially along the west coast.

2. This position is also the centre of the land of the world.

- (1) More than 40 out of the 55 million square miles of land are north of the Equator, and England is practically the centre of them.
- (2) This gives unique advantages for commerce; a radius of 6000 miles includes such widely-separated points as Bombay, Cape Town, Buenos Ayres, and San Francisco.

3. Proximity to Europe is better than contact would have been.

- (1) The islands are near enough to Europe to make full use of it, and far enough away from it to be free from its wars and pestilences.

4. The coast is extremely long in proportion to the area, and is well supplied with good harbours.

- (1) The average proportion of coast to area in Europe is 1 mile to 200 square miles ; in Great Britain it is 1 to 20.
- (2) No place in the islands is more than 70 miles from sea.
- (3) Great Britain has a series of harbours most conveniently near together *vis-à-vis*—the Clyde and the Forth, the Solway and the Tyne, the Mersey and the Humber, the Severn and the Thames.

SURFACE.

5. The country may be divided into five areas.

- (1) The mountains of Scotland are north-west of a line from Helensburgh to Stonehaven.
- (2) The mountains of England and Wales are north-west of a line from Exeter to Berwick.
- (3) The Lowlands of Scotland lie to the south-east of the line from Helensburgh to Stonehaven.
- (4) The Lowlands of England lie to the south-east of the line from Exeter to Berwick.
- (5) Ireland is a large low plain enclosed by a rim of mountains.

6. The backbone of mountains in Great Britain is along the west, *i.e.* the wet, coast.

- (1) This accounts for the heavy rainfall of the west, the length of the eastward rivers, and the easy communication towards the Continent.
- (2) The west is famous, therefore, for minerals and cattle pasture ; the east, for grain and sheep pasture. Cf. the milk products of Devonshire, Somersetshire, Gloucestershire, and Cheshire ; the wool of Leicestershire, Lincolnshire, and Yorkshire ; the barley of the Trent basin (Burton beer), and the wheat of the Thames basin (Reading biscuits).

(3) The country is too narrow to be really dry anywhere, and this accounts for the suitability of inland towns like Oldham and Bradford for spinning and weaving.

7. The soil is naturally fertile except in the mountainous and the marshy districts, and is abundantly supplied with coal and iron.

(1) Scotland and Wales have a very large proportion of mountains.

(2) Ireland has a considerable amount of bog.

(3) The main coal-fields are the “Newcastle,” between the Tyne and the Tees; the “Cotton and Woollen,” between the Ribble and the Trent; the “South Wales,” between the Taff and the Usk; the “Black Country and Potteries”; and the Scotch fields in Ayrshire, Lanarkshire, and along the Forth.

Chapter 36. Towns.

1. London has a population of nearly 5,000,000. It is the largest city in the world.

(1) It has two defects as a port: the channels up its estuary are not very good, and it has no coal or iron. The latter want is ruining its shipbuilding industry in these days of *steel* steamers.

(2) It has, on the other hand, many merits. It commands the great international trade route through the Straits of Dover; it is just opposite the important Continental harbours of Antwerp and Rotterdam; it has a double tide, which goes 80 miles up the river; and the largest vessels afloat can reach the very heart of the city.

(3) It is the centre of the land of the world; it is far enough from the west coast to have a dry, healthy climate; it has supremely good communication inland in all directions by rail or canal. Cf. the names of

the railways—*Great Northern, Midland, North-Western, Great Western, South-Western, South-Eastern*, etc.

- (4) The hops of Kent and the barley of the Eastern Counties supply its breweries; the fruit of Kent and Surrey supplies its jam factories; and the London clay supplies bricks for the enormous number of new houses added every year.
- (5) Its political importance is immense.

2. Glasgow has a population of about 770,000.

- (1) It has a wonderful artificial harbour. Ocean vessels now load where, within the memory of living men, the Clyde was fordable on foot.
- (2) It is on a rich coal and iron field, which has given it a very large shipbuilding industry; and the coal has attracted, as usual, other trades—especially copper and chemicals. Cf. pp. 102, 105.

N.B.—It is much cheaper to send metals to coal than coal to metals.

- (3) It looks westward to the rising population of North America, though its cotton trade is declining.
- (4) It stands at the end of the low central plain, where Scotland is not more than 40 miles broad, and it has excellent communication inland in all directions by rail or canal.
- (5) The soil round is fertile and well cultivated, especially in Ayrshire.
- (6) It collects goods from the whole neighbourhood—coal and iron from Airdrie, Hamilton, Coatbridge, Wishaw, and Motherwell; linen from Johnstone, silk and muslin from Renfrew, thread and shawls from Paisley, etc.
- (7) It is the commercial and industrial capital of Scotland.

3. Liverpool has a population of about 640,000.

- (1) It, too, is on a navigable river with a coal-field behind it, and it looks towards America—from which it draws its staple, cotton.
- (2) The valley of the Weaver is rich in salt, and the salt

London - 5,000,000

and the coal have attracted a large trade in glass and chemicals, which is shared by St. Helens, and in copper, which is shared by Widnes. Cf. Glasgow.

- (3) Its position and the dense population behind it give it naturally a large trade with Ireland.

4. Manchester has a population of about 540,000.

- (1) It stands on a coal-field with excellent communication north, south, and west; it has the water-power of the Pennines behind it, and commands passes across the range.

- (2) Its nearness to the coast and the character of the south-west winds make its climate very suitable for cotton-spinning.

- (3) As a great centre, it manufactures machinery for cotton and for transport.

5. Birmingham has a population of 510,000.

- (1) It stands on a plain in the very centre of the country, and has communication by rail or canal in every direction.

- (2) It has so much coal and iron that it specialises in hardware. The coal has attracted a copper trade, and the coal and the salt of the Droitwich district have attracted a large glass trade. Cf. Liverpool.

- (3) It specialises—naturally, for an inland town (cf. p. 113)—in articles which demand a considerable amount of labour for a small amount of raw material, e.g. watch-springs, screws, pens, needles, bicycles, etc.

6. Leeds has a population of 410,000.

- (1) It stands on a coal-field, with excellent communication north, south, and east; it has the water-power of the Pennines behind it, and commands passes across the range. Cf. Manchester, above.

- (2) The distance from the sea, and the protection of the

mountains to the west of it, make the climate drier than that of Manchester ; and, as this suits sheep, Leeds has become the great wool metropolis.

- (3) As a centre, like Manchester, it manufactures machinery for wool and for transport. And, as in the case of Birmingham, the pastoral district gives it a large leather trade.

7. Dublin has a population of 390,000.

- (1) It has a poor harbour, and no coal or iron.
- (2) It is just in the middle of the Irish coast, and opposite the great port of Liverpool and the dense population of South Lancashire.
- (3) It has excellent communication inland by rail and canal.
- (4) The quality of its water is very suitable for brewing and silk-dyeing ; and its characteristic products are stout and poplins.

8. Sheffield has a population of 350,000.

- (1) It stands on a coal and iron field, half-way between the Lancashire and Lincolnshire coasts, and within easy reach by sea of the Swedish iron. This has made it a great railway centre, and given it a very famous industry in cutlery, steel rails, and armour-plate. It owed the rise of its cutlery industry to the possession of very fine stone for grinding purposes.

9. Edinburgh has a population of 295,000.

- (1) Its importance is due historically to the Castle Rock, which commands the south bank of the Forth ; and, when Scotland had really become one kingdom, this position made Edinburgh the natural capital.
- (2) It stands at the extreme east of the Lowland plain, and has excellent communication inland. It has also a useful little port in Leith, which can easily import ice from Norway for its fish industry.

- (3) It stands on the edge of a coal-field, where wood-pulp can easily be imported from Norway, and its water is very suitable for making paper.

N.B.—The water is also good for brewing. Cf. Dublin.

10. Belfast has a population of 260,000.

- (1) It stands on a navigable, well-sheltered estuary, which runs right up into the Ulster flax and iron field.
- (2) It is near enough to the Ayrshire coast to be able to import coal from Ardrossan very easily.
- (3) Its climate is favourable to a linen industry, and the modern demand for steel ships has given it a large shipbuilding industry.

11. Bristol has a population of 235,000.

- (1) It has a coal-field and a navigable river, but the coal is very hard to work, and the river has some serious drawbacks.
- (2) It owes its importance to its old connection with America in the early days of colonisation.
- (3) It still shares in some of the trades which in those days it monopolised—*e.g.* tobacco, cacao, and sugar.

12. Bradford, too, has a population 235,000.

- (1) It stands on the edge of the Pennine range, with their water-power and their coal, amongst the sheep-farms of West Yorkshire.
- (2) The water is suitable for dyeing.
- (3) It specialises in worsteds and plush.

13. Nottingham has a population of 233,000.

- (1) It stands on the extreme southern edge of the “Yorkshire” coal-field, where the Trent is still navigable.
- (2) Its drier climate does not allow so much strain to be put upon cotton yarn as in Lancashire ; and, therefore, it specialises in lace and hosiery.

(3) As the nearest town on that coal-field to London, it has become an important railway junction.

14. Hull has a population of 230,000.

(1) It has no coal or iron.

(2) It stands on the only navigable opening between the Thames and the Tees, and is splendidly sheltered from the north-east storms.

(3) It is directly opposite to the Elbe and to the Kiel Canal entrance to the Baltic.

(4) It has such excellent communication inland that it has become the commercial capital of Yorkshire.

N.B.—Leeds is the industrial capital, and York is the political and ecclesiastical capital.

(5) Its estuary and its position with regard to the Dogger Bank have given it a very large fishing industry.

15. Newcastle has a population of 220,000.

(1) It stands on the most famous coal-field in the world, and close to the Cleveland iron and salt field.

(2) The coal and iron have given it a large shipbuilding and engineering industry, and the coal and salt have attracted glass and chemical trades. Cf. p. 101.

(3) The Tyne is exposed, and had a very bad bar ; but it has been improved very much to meet modern needs.

16. Leicester has a population of 210,000.

(1) It stands amongst the farms of Leicestershire, with their famous breed of sheep, and has a woollen and a leather industry.

(2) The water, as in the neighbouring county of Derbyshire, is very suitable for dyeing silk ; and Leicester has also a silk industry, especially in hats.

17. Portsmouth has a population of 185,000.

(1) It is too far from coal and iron to be a good commercial harbour, even if it had not an overpowering rival in Southampton, which is much farther inland.

- (2) Like Southampton, it is sheltered by the Isle of Wight from storms and from enemies.
- (3) Being opposite our old enemy, France, it has been made the great naval arsenal of the country.

18. Cardiff has a population of 180,000.

- (1) It exports more coal than any other town on the face of the earth, and the coal is very good.
- (2) It stands between the iron of Glamorganshire and the tin of Devon and Cornwall, which has given it the largest tin-plate industry in the world ; and it has direct communication up the Taff valley to the great iron centre of Merthyr Tydvil.
- (3) The ‘Severn’ trade with the west coast of Africa includes palm oil, which is essential as a ‘flux’ in the tin-plate trade.

19. Dundee has a population of 160,000.

- (1) It has no coal or iron, but it can easily import coal from Fife.
- (2) It is just opposite to the entrance to the Baltic, from which it can import flax and hemp.
- (3) The trade in these fibres has attracted a trade in other fibres, *e.g.* jute.
- (4) The fertility of the sheltered Carse o’ Gowrie has given it a large jam industry.
- (5) It has communication inland by river—as well as by rail—up to Perth ; and, as the most northerly port of any real value, it is the headquarters of the whale-fishery.

20. Bolton and Oldham have a population of 150,000 to 160,000.

- (1) They stand on the Lancashire coal-field, exposed to the damp south-west winds, and looking towards America.
- (2) Where, as in Lancashire, towns cluster together in great numbers, there can be minute Division of Labour—spinning, weaving, printing, dyeing, etc. Bolton and Oldham spin.

(3) Oldham also makes spinning machinery, for which it has the water-power of the Pennines; and Bolton has also an important engineering industry.

21. Sunderland, too, has a population of 150,000.

- (1) It stands on the Durham coal and iron field at the mouth of the Wear.
- (2) It is just opposite the Kiel Canal entrance to the Baltic, from which it can import fibres.
- (3) It has, therefore, a shipbuilding and a sail-cloth industry.

22. Aberdeen has a population of 138,000.

- (1) It stands at the junction of two river valleys, which give communication right up into the interior, and which have produced a famous breed of cattle.
- (2) It has an important granite industry.
- (3) It is one of the fishing centres of Great Britain. A certain kind of haddock takes its name from the neighbouring village of Findon.

23. Brighton and Preston have a population of 120,000.

- (1) Brighton stands on the sunny south coast, within easy reach of London, and has mineral waters.
- (2) Preston weaves cotton, and is on the navigable estuary of the Ribble, where it is crossed by the main line of the London and North-Western Railway.

24. Norwich and Derby have a population of about 100,000.

- (1) Norwich stands amongst the famous sheep-farms of Norfolk at the confluence of the Wensum and the Yare; it was very conveniently situated for trade with the Flemish wool merchants in the Middle Ages; and, until the textile trades were transferred to the coal-fields, it was the woollen metropolis of the country.

(2) Derby stands at the very end of the Pennine range, in a marble and porcelain-clay district, where the water is very suitable for silk-dyeing. It is, therefore, a great railway junction, and has marble, china, and silk trades.

25. West Ham, with 285,000, and Croydon, with 105,000, are really part of London; Salford, with 215,000, is really part of Manchester; and Birkenhead, with 100,000, is really part of Liverpool.

N.B.—A large number of towns in the above list are in Lancashire and Yorkshire, where fuel, machinery, climate, and facilities for transport encourage great textile industries.

TRADE ROUTES.

1. There are five great highways of British commerce: the Atlantic, the Suez, the Cape, the Plate, and the West Indian.

(1) There are also subsidiary routes branching off these to the trade centres of other countries.

2. The Atlantic route, with abundance of steam coal on both sides and a comparatively short journey, does not need coaling-stations *en route*.

(1) The more northerly trade includes, besides the Canadian products (cf. p. 18, etc.), grain and timber from the Eastern States of the Union, and fibre and fruit from the South-Eastern.

(2) The chief ports are Boston, New York, Philadelphia, and Baltimore; Wilmington, Charleston, Galveston, and New Orleans.

3. The Suez route commands the East African, Persian, and Arabian; Indian, East Indian, and Australian trade.

(1) Besides the special Indian, East African, and Australian products (cf. p. 56 and p. 88), the trade includes Arabian gum, Persian carpets and opium, East Indian sugar and spices, Manilla hemp and tobacco, Chinese tea and silk, etc.; and the chief ports are Jeddah, Bushire, and Basra; Bangkok, Canton, and Shanghai; Nagasaki and Yokohama.

(2) This route includes the Mediterranean area, which is very important.

(3) It is guarded by Gibraltar, Malta, Aden, Perim, Diego Garcia, Singapore, and Hong-Kong.

4. The Mediterranean products include :

- (1) Various fruits, *e.g.* oranges and nuts, from Malaga, Almeria, Valencia, and Barcelona.
- (2) Wine from Cette, and olive oil from Marseilles.
- (3) Wine, oil, fruit, sulphur, and marble from Palermo, Messina, Naples, and Genoa.
- (4) Wheat from Trieste and Fiume, currants from Patras and Piræus, and carpets and tobacco from Salonica and Constantinople.
- (5) Maize from Sulina, Galatz, and Braila, wheat from Odessa and Kherson, petroleum from Batum, and silk from Trebizon.
- (6) Raisins, figs, oranges, beans, etc., from Smyrna, Beirut, and Jaffa.
- (7) Cotton, wheat, and onions from Alexandria, gum and ivory from Tripoli, barley and esparto grass from Algiers.

5. The Cape route is now specially the South African route.

- (1) It still commands part of the Australian trade (cf. p. 88, etc.), but cannot compete—in time of peace—with the Suez route, or—in time of war—with the C.P.R. route.
- (2) Besides the special South African or West African products (cf. p. 46), it includes the rubber, palm oil, and ivory of the Congo Free State.

N.B.—The connection of the ‘Severn’ ports with West Africa is largely due to the use of palm oil in the tin-plate industry. Cf. p. 106.

- (3) The route is guarded by Ascension and St. Helena. ✓

6. The Plate route was the old ‘Cape Horn’ route to Australia.

- (1) It includes the Brazil trade in rubber, coffee, rosewood, diamonds, etc., from Para, Bahia, Santos, and Rio de Janeiro, and the typically ‘Plate’ trade in grain, wool, and meat from Monte Video and Buenos Ayres.

7. The West Indian route will be greatly affected by the completion of the canal across the isthmus of Panama.

- (1) Besides the special West Indian products (cf. p. 36, etc.), the trade includes Mexican mahogany, tobacco, and silver from Vera Cruz.
- (2) The Nicaragua route for the canal is longer than the Panama route, but it is lower, healthier, and freer from earthquakes and floods.
- (3) Either route will save about 6000 miles between London and San Francisco, and 9000 between New York and San Francisco ; and this will affect the North American Pacific Trade, *e.g.* from Vancouver and Victoria.

TERMINAL COAL AND IRON FIELDS.

1. All these Trade Routes converge on the coal-fields of the Mother-Country. As the British Isles are composed of a great variety of rock, they contain a great variety of mineral wealth ; but the supply of coal and iron, *i.e.* fuel and machinery, is so abundant that the other minerals have been comparatively ignored.

- (1) About $\frac{1}{2}$ of the 'metal' wealth of the country is in iron, and about $\frac{3}{4}$ of the 'non-metal' wealth is in coal, the total production of coal being about six times as valuable as that of iron.
- (2) Except in Ireland, these two minerals—the most important of all minerals—have three great advantages : they are found side by side, close to navigable water, and along with abundant supplies of limestone and gannister—the limestone for a 'flux' in smelting and for a 'base' in converting steel, and the gannister for an insoluble 'lining' to the converters.
- (3) The existence of coal, iron, and limestone in close proximity to one another forms the basis of manufactures

and of transport both by land and by sea, and marks out the natural areas of manufacture. Thus, the three great coal-producing countries—the United Kingdom, the United States, and Germany—are also the chief producers of iron, and have the largest manufacturing and transport industries in the world.

2. The total coal production of the world is about 500,000,000 tons, of which in 1896 about 190,000,000 were produced by the United Kingdom, 175,000,000 by the United States, and 80,000,000 by Germany.

(1) The United States is, therefore, our only serious rival ; but its rivalry is most serious. Its seams are thicker, more concentrated, more recently opened, and much more easy to work than ours ; and, consequently, the coal is much cheaper.

3. Of the 190,000,000 tons produced in this country, about 133,000,000 were produced by England, 29,000,000 by Scotland, and 28,000,000 by Wales.

(1) The production of the chief counties varied between 14 and 24 million tons :

Glamorganshire,	24	Lancashire,	-	18	
Yorkshire,	-	23	Lanarkshire,	-	16
Durham,	-	22	Staffordshire,	-	14

(2) The export was almost entirely confined to nine towns, and distributed amongst nine countries—the measurement in million tons being :

Cardiff,	-	-	11 $\frac{1}{4}$	France,	-	-	5
Newcastle,	-	-	4 $\frac{1}{2}$	Italy,	-	-	4 $\frac{1}{3}$
North Shields,	-	-	3 $\frac{3}{4}$	Germany,	-	-	4
Newport,	-	-	2 $\frac{1}{2}$	Spain,	-	-	2
Sunderland,	-	-	1 $\frac{3}{4}$	Sweden,	-	-	2
Swansea,	-	-	1 $\frac{1}{2}$	Russia,	-	-	1 $\frac{3}{4}$
Kirkcaldy,	-	-	1 $\frac{1}{4}$	Denmark,	-	-	1 $\frac{3}{4}$
Grangemouth,	-	-	1	Egypt,	-	-	1 $\frac{1}{2}$
Hull,	-	-	1	Norway,	-	-	1

(3) The Irish coal-fields are small, separate from the iron-fields, and far from the sea; and, owing to political troubles and want of capital, they have not been properly worked.

4. As the iron is found on the various coal-fields, it is put to various uses.

- (1) The 'coast' fields specialise in shipbuilding. Cf. the Newcastle coal and Cleveland iron, the Whitehaven coal and Furness iron, the Glasgow coal and Lanarkshire iron.
- (2) The 'inland' fields to which import of raw materials is easy, specialise in textile machinery—'cotton' machinery on the Lancashire coal and iron field, and 'woollen' machinery on the Yorkshire.
- (3) The 'inland' fields to which import of raw materials is not so easy, specialise in hardware; and their characteristic product is articles which demand a considerable amount of labour for a small amount of raw material. Cf. the screws, pens, pins, nails, needles, watch-springs, and bicycles of Birmingham.

5. With such supplies of fuel and machinery, and with a vigorous population concentrated within a very narrow area, it was easy to organise industry and to introduce Division of Labour.

- (1) The principal imports, with their average value during 1896-98, were :

Bread-stuffs,	- £53,000,000	Timber,	- - £22,000,000
Meat (dead and alive),	- 38,000,000	Butter, etc.,	- 18,000,000
Raw cotton,-	- 34,000,000	Sugar,	- - 17,000,000
„ wool, -	- 24,000,000	Tea,	- - - 10,000,000

- (2) The principal exports during the same period were :

Cotton goods,	- £66,000,000	Machinery,	- - £17,000,000
Iron and steel,	- 23,000,000	Coal, etc.,	- - - 16,000,000
Woollen goods,	- 21,000,000		

PROBLEM PAPER.

1. Discuss the probable history of India if the peninsula had been in the north and the continental part in the south.
2. Illustrate the connection between race and occupation, and the connection of both with elevation.
3. What difference would it make to Australia if the Equator was where the Tropic is ?
4. Estimate the effect of planting large strips round the edge of the Kalahari desert with trees.
5. Why, and how, will the distribution of population in the Tropics probably be altered by planting Eucalyptus ?
6. Discuss the suitability of the West Indies for industries that demand local supplies of coloured labour.
7. Illustrate the circumstances which determine the position, growth, and characteristic industries of an important town.
8. What physical features may aid the development of Canada in the future which have hindered it till recently ?
9. How have geographical conditions favoured the growth of a British population and 'British' produce in New Zealand ?
10. What difference would it have made if Ceylon had been situated where the Laccadives are ?
11. Compare the political and commercial value of the various large areas of the empire.
12. Estimate the effect on Jamaica and on Ceylon of a Panama canal.
13. How far does the surface of South Africa favour its union under the British rule ?

POPULATION OF CHIEF TOWNS.*

Calcutta, with suburbs, about 1,000,000 = 2 Cairo.

Bombay, with suburbs, over 900,000

Melbourne,	. . . . }	about 460,000 =	{ Lyons. Boston.
Madras, }		
Haidrabad,	. . . . }	about 430,000 =	{ Munich. Odessa.
Sydney, }		
Lucknow,	. . . . }	275,000	{ Bordeaux.
		to	
Victoria (Hong-Kong),	. . . . }	250,000	Buffalo, U.S.A.
Benares,	. . . . }	230,000	{ Lille.
		to	
Montreal,	. . . . }	220,000	Genoa.
Delhi,	. . . . }		{ Hague.
Mandalay,	. . . . }		Newark, U.S.A.
Cawnpur,	. . . . }		Pernambuco.
Toronto,	. . . . }	195,000	Portsmouth.
Bangalore,	. . . . }	to	Cardiff.
Singapore,	. . . . }	175,000	Düsseldorf.
Rangoon,	. . . . }		Trieste.
Lahore,	. . . . }		Prague.
Allahabad,	. . . . }		Valencia.
Agra,	. . . . }		Minneapolis.
Patna,	. . . . }		Yokohama.
Poona,	. . . . }		Toulouse.
Jaipur,	. . . . }	to	Venice.
Ahmedabad,	. . . . }	150,000	Fez.
Amritsar,	. . . . }		Marocco.
Adelaide, }		Dundee.

* For population of chief towns in the United Kingdom, see pp. 100-108.

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